

# INSTALLATION GUIDE & USER MANUAL

## SOUNDPLUS™ INFRARED LISTENING SYSTEM

Model WIR TX925, Two-Channel Listening System

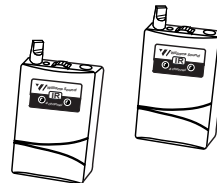
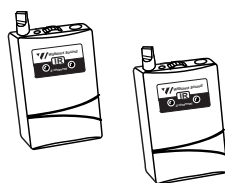
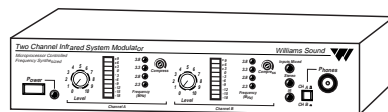
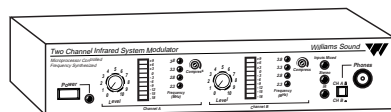
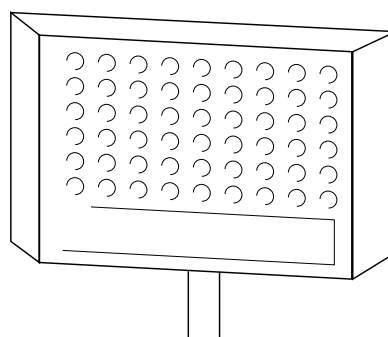
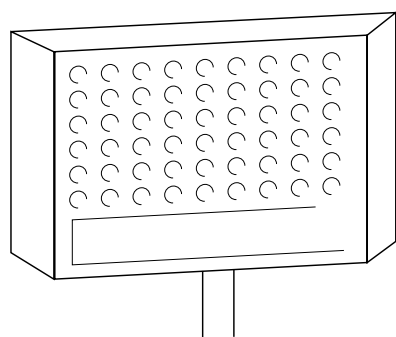
Model WIR TX900, Four-Channel Listening System

Model WIR SYS 1, Two-Channel Listening System

Model WIR SYS 2, Two-Channel Listening System

Model WIR SYS 2P, Two-Channel Listening System

Model WIR SYS 4, Four-Channel Listening System



Modulator Model MOD 232

Emitter Model WIR TX9

Optional Receiver Models WIR RX12-4,  
WIR RX14-2



**Williams Sound®**  
Helping People Hear



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## **INSTALLATION GUIDE AND USER MANUAL**

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## SYSTEM OVERVIEW

The Williams Sound SoundPlus™ Infrared Listening System consists of a MOD 232 Modulator(s) and one or more TX9 Emitters which use invisible infrared (IR) light to broadcast speech or music to wireless infrared receivers.

The MOD 232 is a two-channel modulator with four selectable frequencies. It accepts two mic or line-level inputs and sends 2.3, 2.8, 3.3, or 3.8 MHz frequency synthesized signals to the TX9 Emitter via coaxial cable (a second MOD 232 Modulator can be added via coaxial cable for four-channel application). The emitter transmits invisible infrared light into the listening area. Infrared receivers detect the transmission and convert the light signals back into audio signals. The high frequency 2.3-3.8 MHz carrier frequencies minimize interference problems from high efficiency lighting.

The system is designed to transmit high quality audio for hearing assistance and language translation applications. Because the system uses infrared light for transmission, it is not affected by interference from radio equipment and does not interfere with radio equipment. No FCC license or radio approval is required.

The TX9 Emitter is designed to distribute its power equally among the channels sent to it for transmission. When two channels are present, the TX9 divides its power equally among the two signals to achieve a coverage area of approximately 18,000 square feet (1,700 square meters). When four signals are sent to the TX9 (which can occur when two MOD 232 Modulators are connected via coaxial cable), the TX9 divides its power equally among the four signals. This makes for a practical coverage area of about 11,000 square feet (1,022 square meters). Larger areas can be covered with additional emitters. Coverage area will vary depending on the sensitivity of the infrared receiver being used and reflections and absorption of the IR signal in the listening area.

The system can be used with microphones as a stand-alone system, or can be connected to other sound equipment. Infrared systems generally cannot be used in direct sunlight because of sunlight's large amount of interfering infrared light.

**Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.**

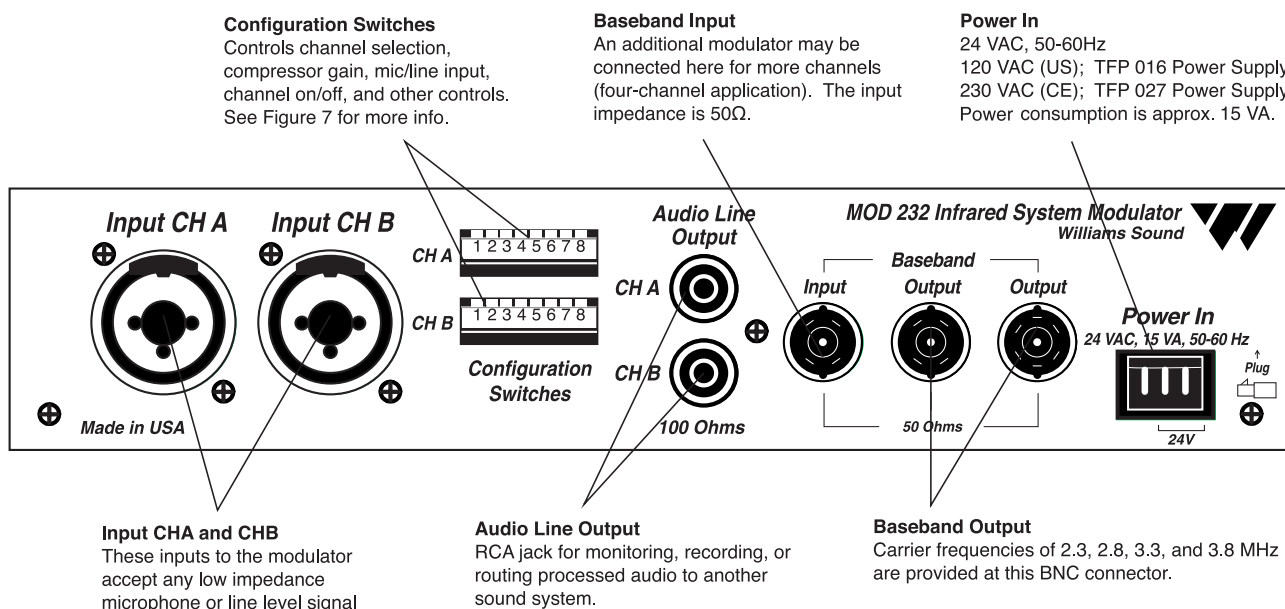
# MOD 232 Modulator Setup

## DETERMINE LOCATION

The modulator is usually located with the sound system amplifier or mixer for easy access to an audio input signal. For portable systems, the modulator can be placed near the emitter or in another convenient location. Infrared Stand Kits (SS-6, SS-10, SS-11) are available for portable systems. See pages 19-21.

## WIRING AND CONNECTIONS

Figure 1: MOD 232 (Rear View)



**WARNING: POWERLINE VOLTAGE MUST NOT FALL BELOW 94V, OR SYSTEM PERFORMANCE WILL BE GREATLY REDUCED!**

### POWER CONNECTION FOR U.S. APPLICATION

Step 1: Connect the TFP 016 power supply to the 3-pin Molex™ connector located on the rear of the MOD 232. (See Figure 2, right.)

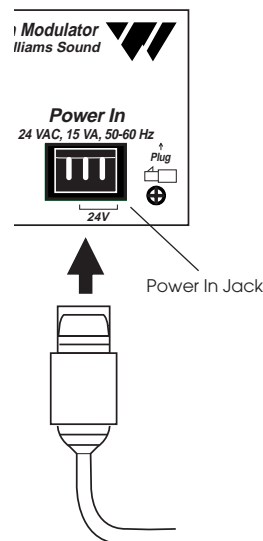
### FOR APPLICATIONS OUTSIDE THE U.S. REQUIRING 240 VAC MAINS SUPPLY:

Use the transformer power supply, model TFP 027.  
Secondary specifications: 24 VAC, 35 VA, 50/60 Hz.  
Step 2: Plug the power supply into the AC outlet.

TFP 027-01: 230VAC, Euro Mains Plug

TFP 027-02: 230VAC, UK Mains Plug

Figure 2: Power Connection



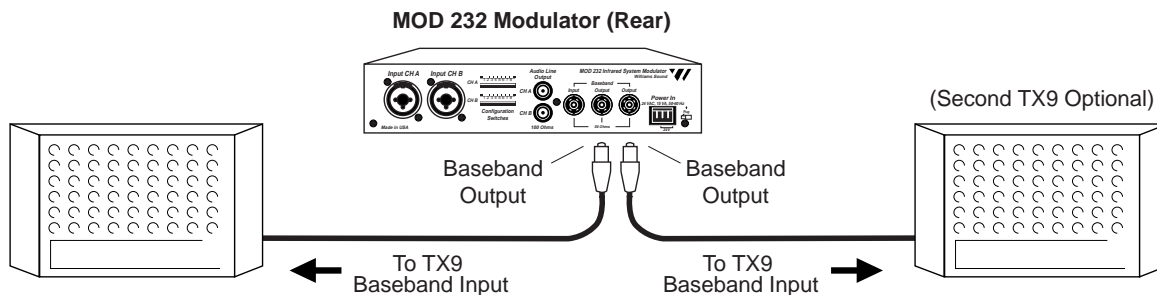
### BASEBAND CABLE CONNECTION

The MOD 232 can directly drive one or two emitters. TX9 emitters repeat the baseband signal, so any number of emitters can be used. The modulator outputs CANNOT be split with CATV splitters.

Determine the length of RG-58 cable needed to reach from the TX9 Emitter to the Modulator unit. Install BNC connectors to each end of the cable (see page 24 for installation details).

For **two-channel** application, only one MOD 232 is required: Connect the coaxial cable to one of the Baseband Output jacks on the rear of the MOD 232. The other end of the coaxial cable connects to the Baseband Input jack of the TX9 Emitter. See Figure 3 below.

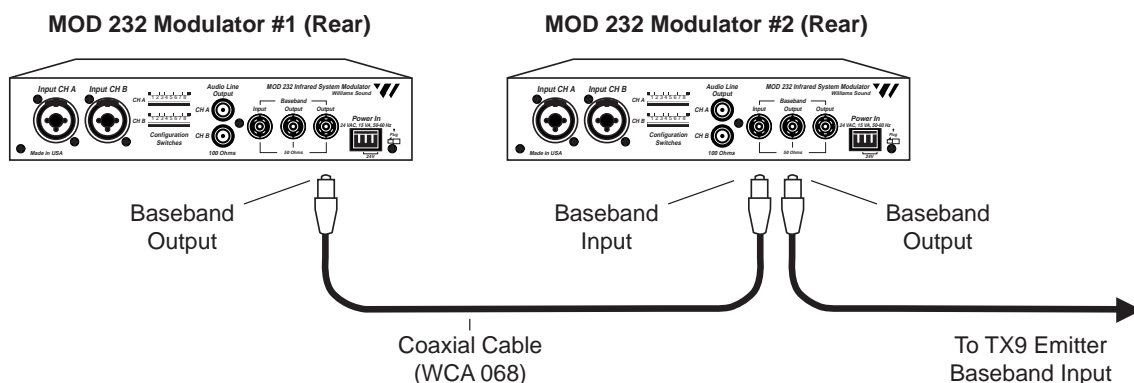
**Figure 3: Baseband Connection, Two Channel Application**



Connect to the TX9 using RG-58 cable and BNC connectors. The MOD 232 has two baseband output jacks to simplify connections when multiple emitters are used.

To setup a system for **four-channel** operation, two MOD 232 Modulators are required. Link the two Modulator units together. Connect the WCA 068 coaxial cable (supplied with the SoundPlus™ Infrared Listening System) to one of the Baseband Output Jacks in the rear of the *first* MOD 232 in the chain. The other end of the coaxial cable connects to the Baseband Input Jack of the *second* MOD 232 in the chain. Then connect the baseband output from the second modulator in the chain to the TX9 emitter(s) baseband input connector. See Figure 4 below.

**Figure 4: Baseband Connection, Four Channel Application**



**IMPORTANT:** Each channel must be set to a different frequency.

## AUDIO CONNECTION

### MICROPHONE INPUT:

With the modulator DIP switches set for microphone input, the 3-pin XLR jack accepts balanced microphones. Power for condenser microphones can be selected by DIP switch. The minimum input level is 100uV and the maximum level is 90 mV.

### XLR LINE-LEVEL INPUT:

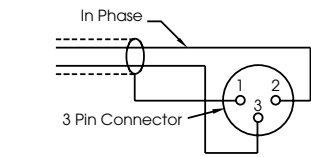
With the modulator DIP switches set for line-level input, the 3-pin XLR jack accepts balanced line-level audio inputs. The minimum input level is 21mV and the maximum level is 10uV.

### 1/4" TRS LINE-LEVEL INPUT:

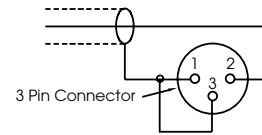
The 1/4" Tip/Ring/Sleeve (TRS) jack can accept only a balanced or unbalanced line-level input.

A 25 V, 70 V, or 100 V speaker line can be connected to the balanced line input using an appropriate attenuator. "T" pads made with resistors yield better fidelity than speaker matching transformers.

**Figure 5: Audio Connection**



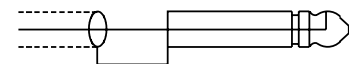
Balanced Line Using 3-Pin Connector



Unbalanced Line Using 3-Pin Connector



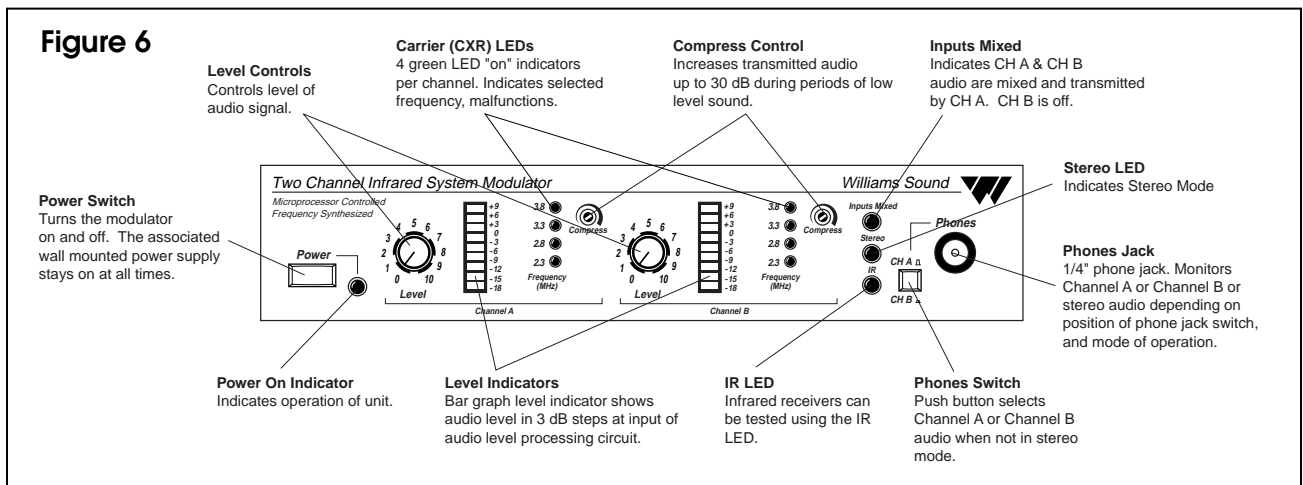
Balanced Line Using 1/4" Connector



Unbalanced Line Using 1/4" Connector

## FEATURES AND CONTROLS

**Figure 6**



### POWER SWITCH

Turns the modulator on and off. The associated wall mounted power supply stays on at all times and may operate continuously.

### POWER ON INDICATOR

Indicates operation of modulator.

### LEVEL CONTROL

Controls level of audio signal. The control is connected between the input amplifier and the audio level processing circuit.



## LEVEL INDICATOR

The bar graph indicator shows audio level in 3dB steps at the input of the audio level processing circuit. The indicator is peak responding and is calibrated so that optimum level is reached when the amber +3 and +6 lights usually blink and the red +9 light blinks occasionally. Use the level controls to set the audio levels.

## FREQUENCY (CARRIER)

Channel A and B have four "on" indicators to designate 2.3, 2.8, 3.3, or 3.8 MHz frequency. The carrier comes on when power is applied, but goes off automatically if there is no audio for approximately 30 minutes. Audio sufficient to light the -18 level indicator will reset the timer, allowing for another 30 minutes of no audio before the carrier shuts off again. This timer can be disabled. See pages 9, 11. The operating frequency for each channel is selected by DIP switches.

## COMPRESS CONTROL

The Compress Control increases transmitted audio up to 30 dB during periods of low level sound. To increase compression, use a tuning wand (PLT 005) or small screw driver and gently turn the compression pot clockwise. The compression slope can be adjusted from 1:1 (no compression) to 4:1 (substantial compression).

Compression is used for hearing assistance applications to reduce dynamic range.

Compression is not normally used in language interpretation application. Note: The modulator has been pre-set for minimum compression. Refer to page 11 for an explanation of compressor settings on the MOD 232.

## PHONES

The phones jack monitors the transmitted audio signal. If the modulator is operating in two channel mode, Channel A or Channel B can be selected for monitoring. If the modulator is operating in stereo mode, the jack produces a stereo output. Use the phones jack to verify the quality of the transmitted audio.

## PHONES SWITCH

Push-button selector to monitor Channel A or Channel B audio when not in stereo mode.

## INPUTS MIXED LED

Indicates Channel A and Channel B audio are mixed and transmitted by Channel A. Channel B carrier is off.

## STEREO LED

Indicates stereo mode. Audio processing (compression, limiting) are coupled and adjusted by the Channel A compression adjust. Channel frequencies are forced to 2.3 and 2.8 or 3.3 and 3.8.

## IR LED

The IR LED transmits a short range (about 1 meter) infrared signal. Infrared receivers can be tested using the infrared LED. The signal emitted from this LED is modulated by the carriers generated in this unit only. If this modulator is connected to other modulators for additional channels, their carriers are not emitted by the LED, and must be monitored at those modulators.



## CONFIGURATION SETTINGS

The diagram below (Figure 7) illustrates how to configure your system using the configuration switches (Figure 8) on the back of the MOD 232 Modulator. This diagram is also printed on top of the MOD 232 Modulator unit for quick reference.

**Figure 7**

SWITCH SETTINGS		CHANNEL A								CHANNEL B							
		1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
<b>COMPRESSOR GAIN</b> <small>SETS MAXIMUM AVAILABLE COMPRESSOR GAIN</small>	<b>MAXIMUM</b>	↓								↓							
	<b>MODERATE</b>	↑								↑							
<b>MIC/LINE INPUT</b> <small>LINE ALWAYS ON 1/4 INCH MIC OR LINE ON 3 PIN</small>	<b>LINE</b>		↓								↓						
	<b>MIC</b>		↑								↑						
<b>MICROPHONE SIMPLEX POWER</b> <small>15 VOLTS PER DIN 45596 NOT AVAILABLE IN LINE INPUT MODE</small>	<b>OFF</b>			↓								↓					
	<b>ON</b>			↑								↑					
<b>CARRIER FREQUENCY</b>  <small>DO NOT SET BOTH CHANNELS TO THE SAME FREQUENCY</small>	<b>3.800 MHz</b>				↑	↑							↑	↑			
	<b>3.300 MHz</b>				↓	↓							↓	↓			
	<b>2.800 MHz</b>				↑	↓							↑	↓			
	<b>2.300 MHz</b>				↓	↓							↓	↓			
<b>CHANNEL ENABLE</b> <small>TURNS CHANNEL OFF WHEN DISABLED</small>	<b>ENABLED</b>						↓								↓		
	<b>DISABLED</b>						↑								↑		
<b>MIX INPUTS</b> <small>AVAILABLE ONLY IN ONE CHANNEL OPERATION</small>	<b>NOT MIXED</b>							↓									
	<b>MIXED</b>							↑									
<b>2 CHANNEL/STEREO</b> <small>IN STEREO MODE, CHANNEL A COMPRESSION SETTING CONTROLS BOTH CHANNELS</small>	<b>NON-STEREO</b>															↓	
	<b>STEREO</b>															↑	
<b>AUTO SHUT-OFF TIMER</b> <small>TURNS CARRIER[S] OFF AFTER 30 MINUTES OF NO AUDIO</small>	<b>DISABLED</b>								↓								↓
	<b>ENABLED</b>								↑								↑

↑ Arrow up  
indicates on  
position

↓ Arrow down  
indicates off  
position

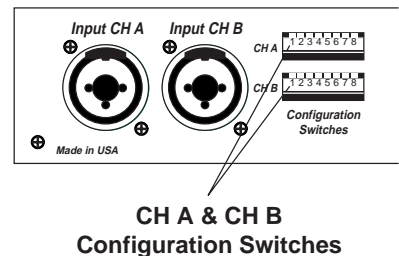
### CARRIER FREQUENCY

Choose between four selectable frequencies: 2.3, 2.8, 3.3, or 3.8 MHz. Select one frequency for each channel. **MAKE SURE EACH CHANNEL IS SET TO A DIFFERENT FREQUENCY.** To operate in four-channel mode, two MOD 232 units will need to be installed (see Figure 4, page 6). To select a frequency on the MOD 232:

#### Instructions:

- For **2.3 MHz**: Place switch 4 & 5 in the ↓ "off" position.
- For **2.8 MHz**: Place switch 4 in the ↑ "on" position, Place switch 5 in the ↓ "off" position.
- For **3.3 MHz**: Place switch 4 in the ↓ "off" position, Place switch 5 in the ↑ "on" position.
- For **3.8 MHz**: Place switch 4 in the ↑ "on" position, Place switch 5 in the ↑ "on" position.

**Figure 8: Configuration Switches**  
Adjust switch settings on rear of MOD 232 Modulator here:



## Mic/LINE INPUT

The MOD 232 only accepts line level balanced or unbalanced inputs on 1/4" TRS phone plug. To setup the MOD 232 to accept line level inputs on the 3 pin XLR connector:

Instructions:

Place switch 2 in the ↓ "off" position.

To setup the MOD 232 to accept mic input on 3 pin XLR connector:

Instructions:

Place switch 2 in the ↑ "on" position.

## MICROPHONE SIMPLEX POWER

Most condenser microphones require simplex power to operate. Power can be supplied according to DIN 45596. (Selecting line-level input above will automatically disable simplex power.) To enable simplex power on the MOD 232:

Instructions:

Place switch 3 in the ↑ "on" position.

To disable simplex power on the MOD 232:

Instructions:

Place switch 3 in the ↓ "off" position.

## CHANNEL ENABLE

The factory setting of both channels are *on*. Note: When Mix Inputs mode is selected, the MOD 232 defaults to single channel operation, turning off Channel B.

To manually disable a channel:

Instructions:

Place switch 6 in the ↑ "on" position.

To manually enable a channel:

Instructions:

Place switch 6 in the ↓ "off" position.

## MIX INPUTS (SINGLE CHANNEL OPERATION)

Mixing audio inputs places the MOD 232 in one-channel operation, turning off the carrier for Channel B. Channel A & Channel B inputs are mixed and transmitted on Channel A.

To enable the MOD 232 to mix audio inputs:

Instructions:

Place switch 7 on **Channel A** in the ↑ "on" position

To disable the MOD 232 to mix audio inputs:

Instructions:

Place switch 7 on **Channel A** in the ↓ "off" position

## 2 CHANNEL/STEREO

In *stereo mode*, audio processing is coupled, providing a consistent stereo image, important when listening with headphones. Compression for both channels is adjusted with the CH A compression control. The left channel audio source should feed Input CH A and the right channel audio source should feed Input Channel B. *2 Channel mode* provides mono processed audio. Each channel operates independently and transmits two mono signals.

To set the MOD 232 in stereo mode:

Instructions:

Place switch 7 on **Channel B** in the ↑ "on" position

To set the MOD 232 in 2 Channel mode:

Instructions:

Place switch 7 on **Channel B** in the ↓ "off" position

**NOTE:** In stereo mode, Channel A compression setting controls both channels.

### AUTO SHUT-OFF TIMER

The carriers for each channel shut off automatically if there is no audio for approximately 30 minutes. Audio sufficient to light the -18 level indicator light will turn the carrier back on immediately. To disable the auto shut-off timer on the MOD 232:

Instructions:

Place switch 8 in the ↓ “off” position.

To enable the auto shut-off timer on the MOD 232:

Instructions:

Place switch 8 in the ↑ “on” position.

*In stereo mode, the timers operate together.*

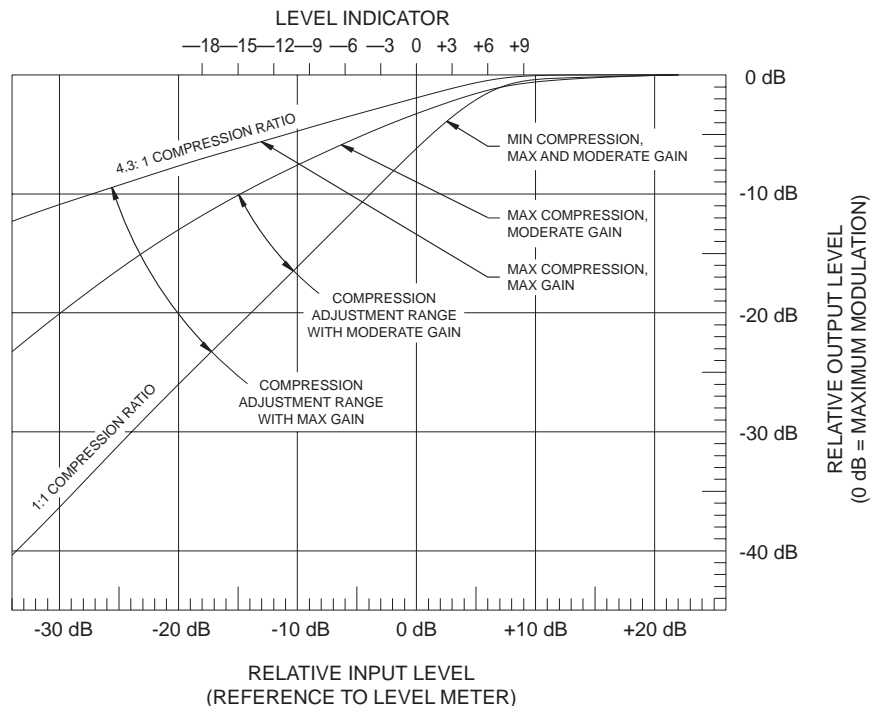
### COMPRESSOR GAIN

The MOD 232's Compressor Gain is set in “Moderate” mode from the factory. Use this setting for simultaneous interpretation. Be sure that the compress pot control, located on the front of the MOD 232 (Figure 6, page 7), is turned fully counter-clockwise. Compression can be added if desired by turning the compress pot control clockwise.

For hearing assistance applications, the MOD 232's Compressor Gain can be set to “Maximum” mode. For additional compression, use a tuning wand (PLT 005) or small screw driver and gently turn the compress pot (Figure 6, page 7) on the front of the MOD 232 clockwise.

The difference between “Moderate” and “Maximum” Compressor Gain is illustrated below:

**Figure 9**



To setup the MOD 232 for “Moderate” Compressor Gain:

Instructions:

Place switch 1 in the ↑ “on” position.

To setup the MOD 232 for “Maximum” Compressor Gain:

Instructions:

Place switch 1 in the ↓ “off” position.

## TX9 EMITTER SETUP

### TX9 LOCATION AND PLACEMENT

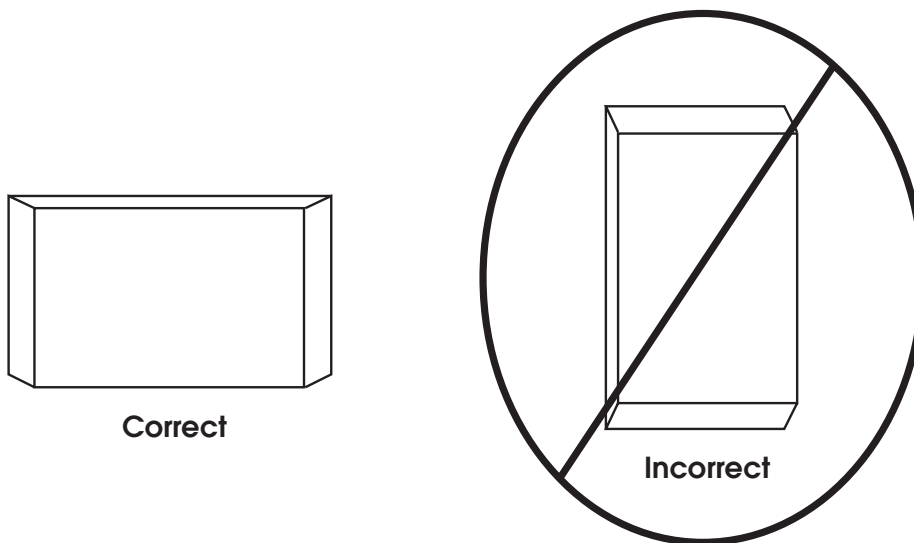
To determine the best location for the TX9 Emitter, it helps to think of the IR emitter as an invisible floodlight. You'll want to aim it so the listeners are "flooded" with the infrared light. The emitter should also be positioned high enough so it won't be blocked by people and other physical obstructions. Mount the emitter at least 2 ft. (.61 m) above the audience.

Position the emitter to face in a slightly downward angle - that will increase the "throw" of the infrared beam. Infrared light reflects off most surfaces and scatters, increasing the coverage area. Rough surfaces tend to absorb infrared light, minimizing reflections, and limiting coverage to the direct illumination. Remember: opaque objects block infrared light. Thus, emitters cannot be concealed behind opaque walls, curtains, etc.

The emitter front red plastic lens must NOT be painted. Neither should emitters be used in areas of extreme high or low temperature, humidity, or chemical environments.

The TX9 Infrared Emitter should not be installed where there is a lot of direct sunlight, which can create infrared interference.

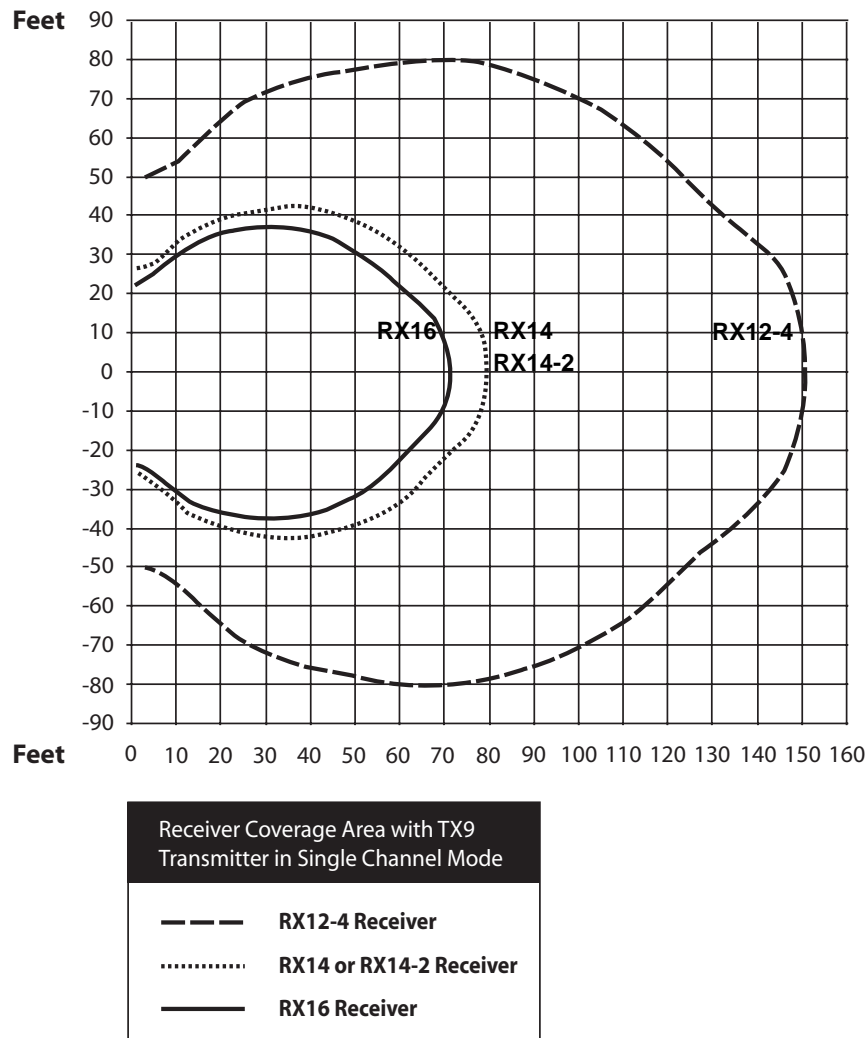
**Figure 10: NOTE: When pointing the emitter, be sure to keep the long dimension horizontal.**



## COVERAGE AREA

Determine the coverage area needed for the seating area. When using the TX9 emitter with the RX12-4 receiver, in single channel mode, the TX9 can achieve a coverage area of 28,000 ft<sup>2</sup> (2,600 m<sup>2</sup>). In four channel mode, the TX9 divides its power among the four signals to achieve a coverage area of 11,000 ft<sup>2</sup> (1,022 m<sup>2</sup>). NOTE: The coverage area will vary depending on the sensitivity of the infrared receiver being used. The following diagram illustrates coverage area when using a RX12-4, RX14, RX14-2, or RX16 receiver with a single TX9 emitter in single channel mode.

**Figure 11: Maximum Range when using the RX12-4, RX14, RX14-2 or RX16 receiver**



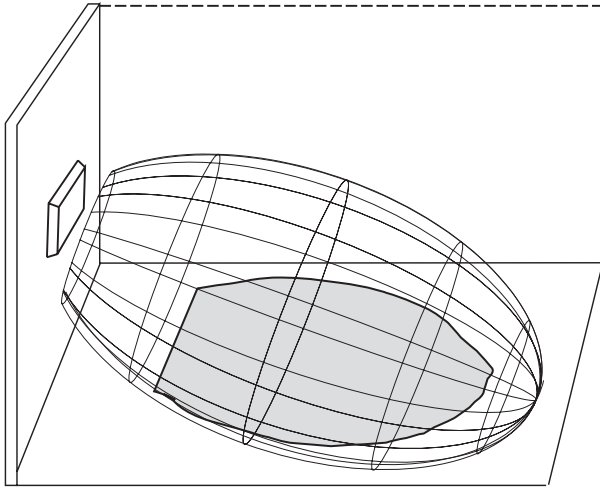
These patterns are the direct radiation pattern. the infrared radiation does not drop to zero outside the illustrated patterns; it decreases. It still may be useable at a greater distance, depending on the receiver sensitivity and the reflective characteristics of the room.

Reflections of the infrared light from walls, ceilings, and floors may change these patterns.

**Important: Remember to point the emitter towards the listening audience!**

Remember: opaque objects block infrared light. Thus, emitters cannot be concealed behind opaque walls, curtains, etc.

**FIG 12: 3-Dimension Foot Pattern**



The TX9 floods the listening audience with a cone shape light pattern as shown here.

The path of the cone shape light leaves a pattern on the ground, or "foot print," and indicates where the strongest receiver reception will occur.

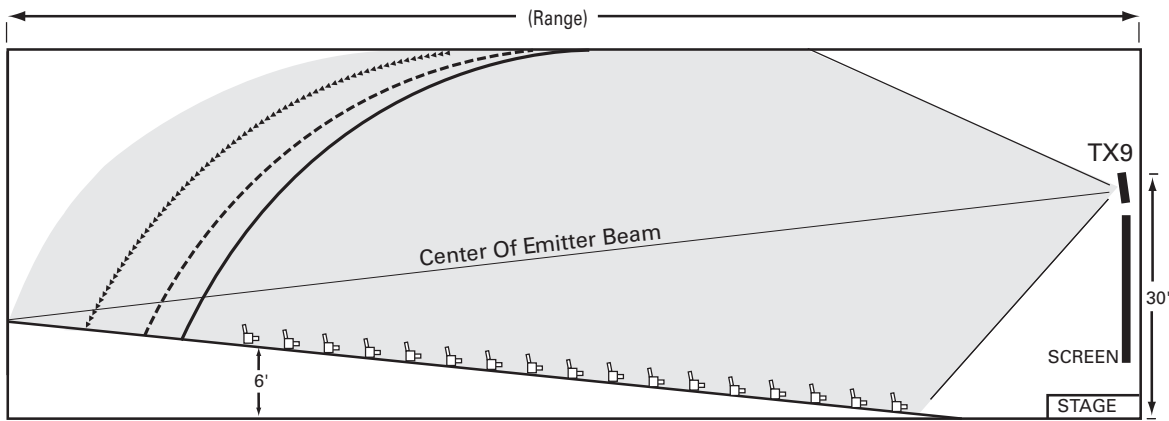
The actual coverage area will vary depending on the sensitivity of the receiver being used. Refer to Figures 11 and 14 to determine how many emitters are required for 100% coverage of the listening area.

To determine the best location for the emitter, it helps to think of the IR emitter as an invisible floodlight. You'll want to aim it so the listeners are "flooded" with the infrared light. The emitter should also be positioned high enough so it won't be blocked by people and other physical obstructions. See Figure 13 below. **Mount the emitter at least 2 ft. (.61 m) above the audience.** Position the emitter to face in a slightly downward angle, 20°, that will increase the "throw" of the infrared beam.

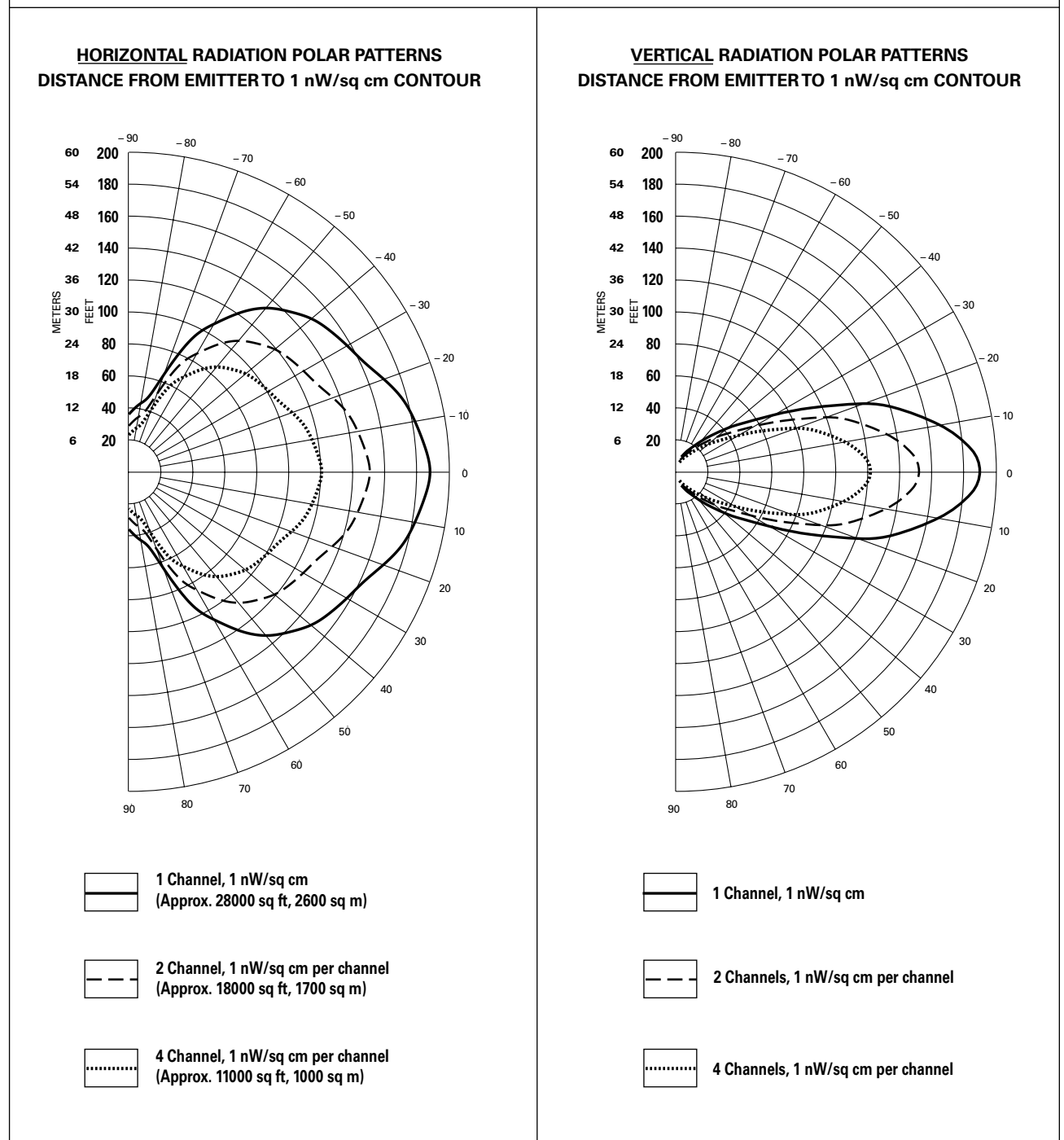
**FIG 13: Vertical Beam Spread**

**Minimum Receiver Range When Operating with a TX9 Emitter in Single Channel Mode**

 RX12-4 Receiver: 150' (45 m)
  RX14-2: 80' (24 m)
  RX16: 70' (21 m)



**FIG 14: Horizontal and Vertical Radiation Polar Plots**



Reflections of the infrared light from walls, ceilings, and floors may change these patterns. Important: remember to point the emitter towards the listening audience!

If you're not getting sufficient coverage with a single, properly installed TX9 Emitter, you'll need to add additional emitters to achieve full coverage of your listening area (see page 16, *Using Multiple Emitters*). Figures 15a and 15b illustrate how multiple emitters can be used for large room installations.

## Multiple Emitters Installed to Maximize Coverage

**FIG. 15a: Overlapping Illumination Patterns to Cover Larger Listening Areas**

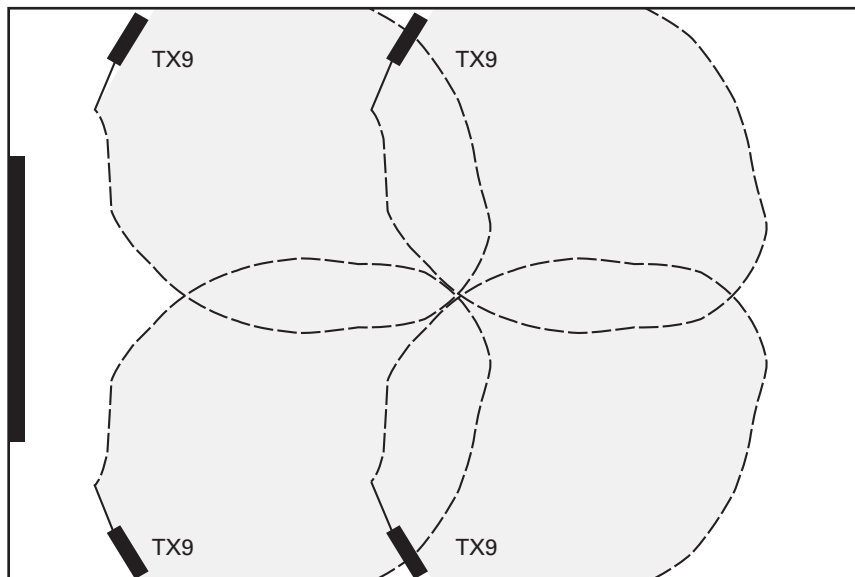
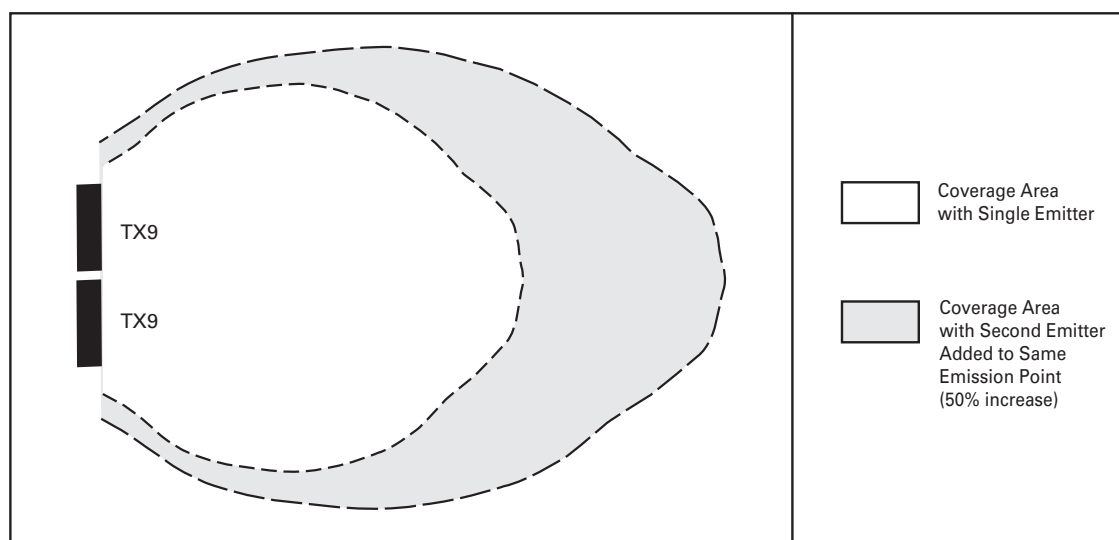


Fig. 15a above is a typical example of how multiple emitters are used to cover larger listening areas. Generally it is desirable for the illumination patterns to overlap. Note: The coverage area will vary depending on the infrared receiver being used; refer to Figures 11 and 14 to determine how many emitters are required to achieve full coverage of a listening area.

**FIG. 15b: Overlapping Illumination Patterns to Cover Larger Listening Areas**

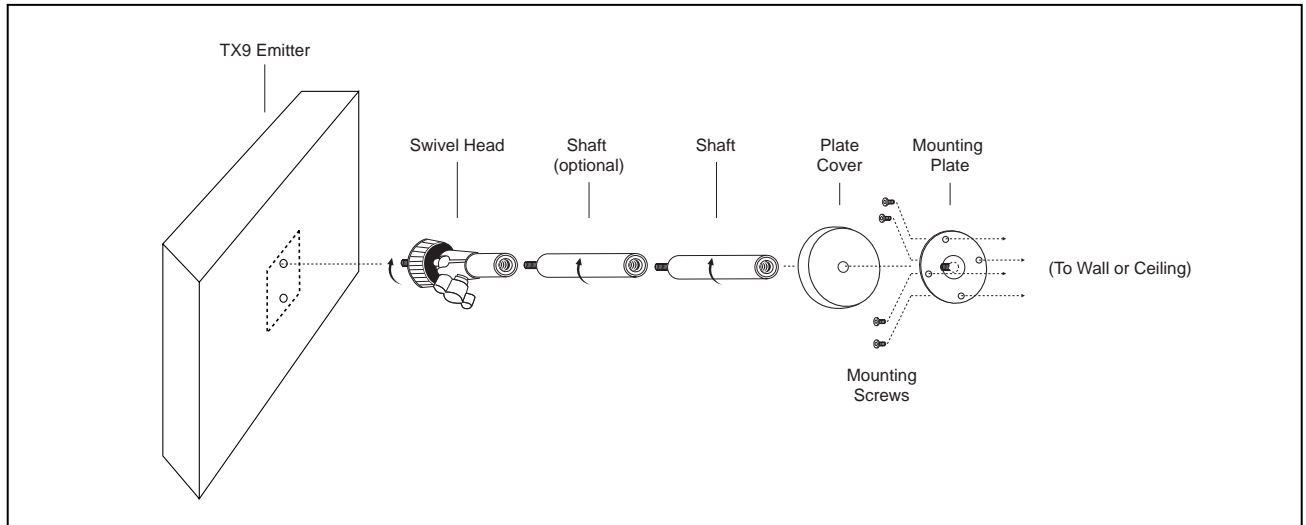


When two emitters are used at the same emission point in *single channel mode*, the overall coverage area increases 50%. When using an RX12-4 receiver, as a result, the coverage area will increase to an estimated 42,000 ft<sup>2</sup> (3,902 m<sup>2</sup>); the RX14-2 will increase to 5,250 ft<sup>2</sup> (488 m<sup>2</sup>); the RX16 will increase to 4,590 ft<sup>2</sup> (426 m<sup>2</sup>).

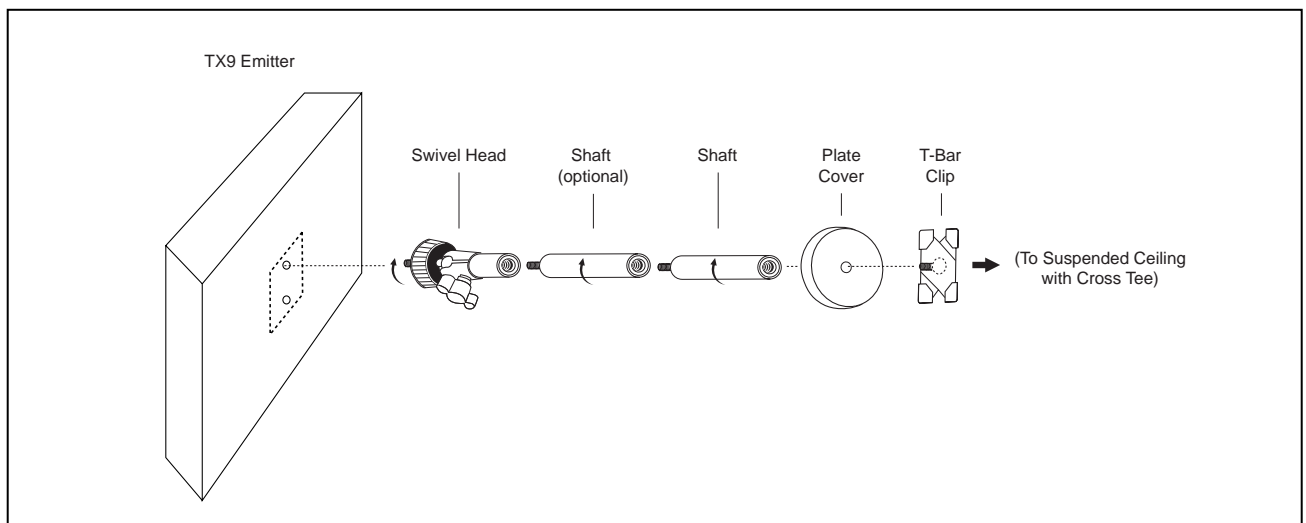


## MOUNTING THE TX9 TO A WALL OR CEILING

**Figure 16a:** Mounting the TX9 to a wall or ceiling with the BKT 024



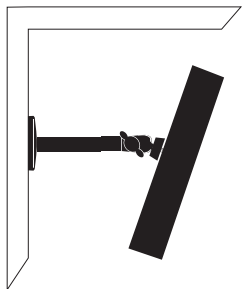
**Figure 16b:** Mounting the TX9 to a ceiling cross tee with the BKT 024



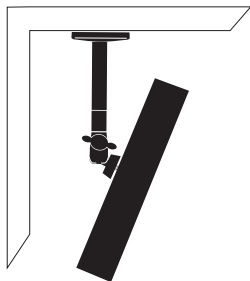
*\*\*See page 18 for step-by-step installation instructions.*

## MOUNTING THE TX9 TO A WALL OR CEILING, STEP-BY-STEP:

**Figure 17a**



**Figure 17b**



**Figure 17a:**

Mounting the TX9 on to a wall with the BKT 024.

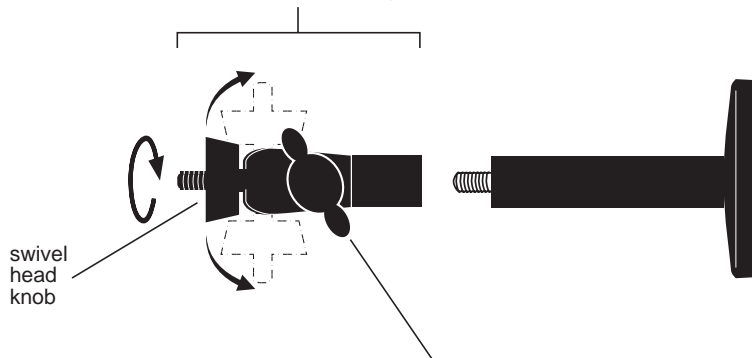
Tip: To keep the TX9 level, rotate the tension screw (Fig. 18) so it rests of top of the bracket.

**Figure 17b:** Mounting the TXP on to a ceiling with the BKT 024

- Step 1:** Using the mounting plate (Figure 16a) as a template, mark the hole locations on the mounting surface where the TX9 will be installed.
- Step 2:** Locate the top mounting hole in the rear of the TX9 emitter. See Figure 16. Gently screw the male end of the swivel head on to the emitter. Tighten the tension screw (Figure 18): turn clockwise until the connection is secure.
- Step 3:** Screw the male end of the shaft into the female end of the swivel head. An additional shaft can be added to create more distance between the wall/ceiling and Emitter.
- Step 4:** Place the plate cover snugly over the mounting plate. This will hide the screws after installation.
- Step 5:** Screw the male end of the mounting plate into the female end of the shaft. *For suspended ceilings,* screw the female end of the shaft into the male end of the *T-Bar clip*. The mounting bracket is now installed on to the TX9 Emitter.
- Step 6:** Position the TX9 Emitter and BKT 024 so the mounting plate lines up with the marked holes on the mounting surface. Fasten the mounting plate to the surface using screws and wall anchors. *Mounting the TX9 to a Suspended Ceiling with Cross Tee:* Fasten the T-Bar clip (Figure 16b) on to the desired Cross Tee.
- Step 7:** Position the TX9 Emitter to the desired angle: Begin by gently turning the tension screw (Figure 18) counter clockwise to release the swivel head. Adjust the TX9 to the desired angle. When the TX9 is in the desired position, gently turn the tension screw clockwise until the swivel head is securely in place.

**Figure 18: BKT 024**

The **swivel head** can rotate 90° left or right and pivot 360° off its axis for maximum flexibility.

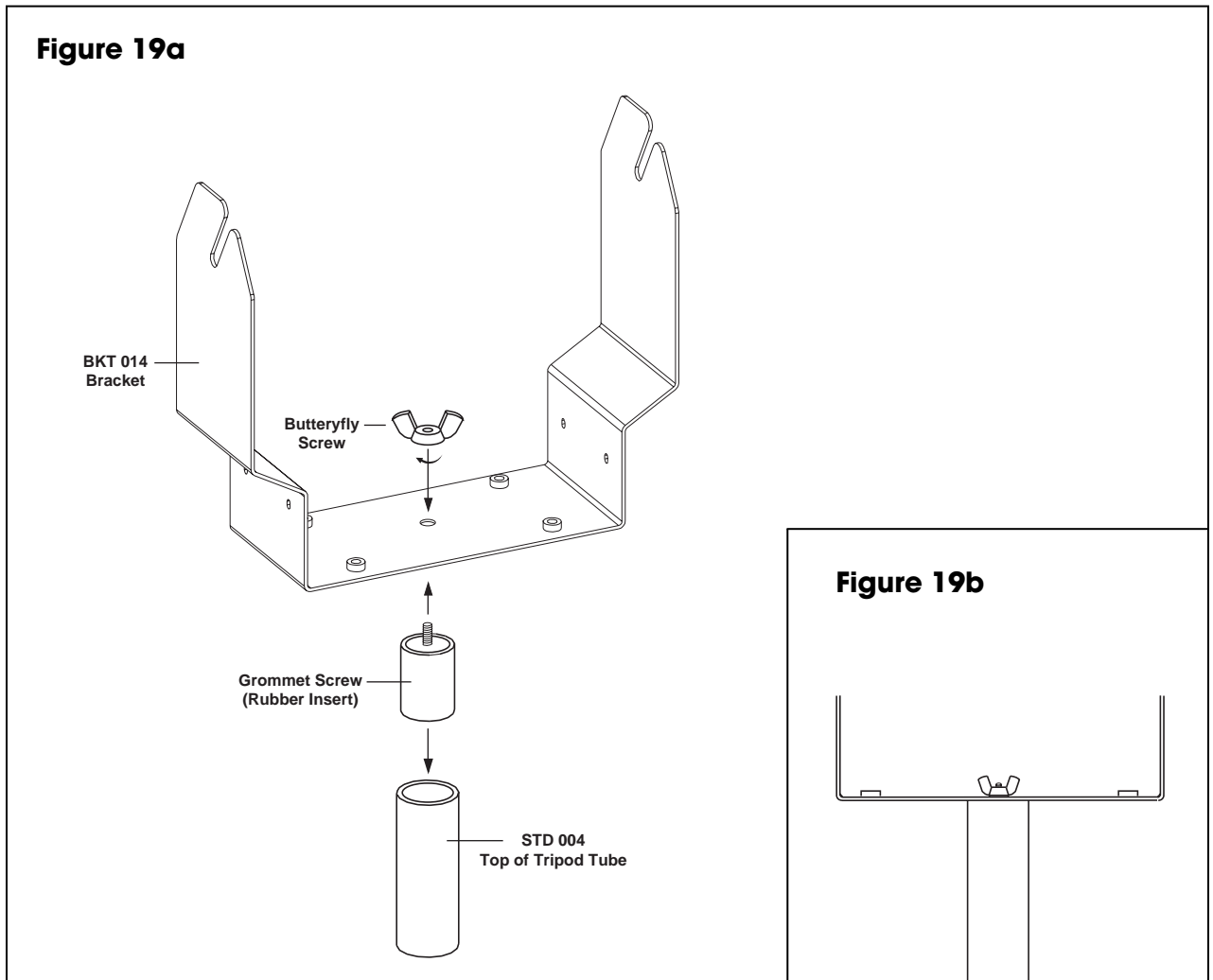


The **tension screw** controls the action of the swivel head. To lock the swivel head into position, turn the tension screw clockwise. To release the swivel head action, turn the tension screw counter clockwise.

## MOUNTING THE TX9 EMITTER AND MOD 232 MODULATOR ON TO A TRIPOD

### SS-6 Infrared Stand Kit

The SS-6 Infrared Stand Kit will hold a *single* TX9 Emitter and MOD 232 Modulator. The following diagrams (Figures 19a, 19b, & 20) illustrates proper installation when using the SS-6 Infrared Stand Kit.

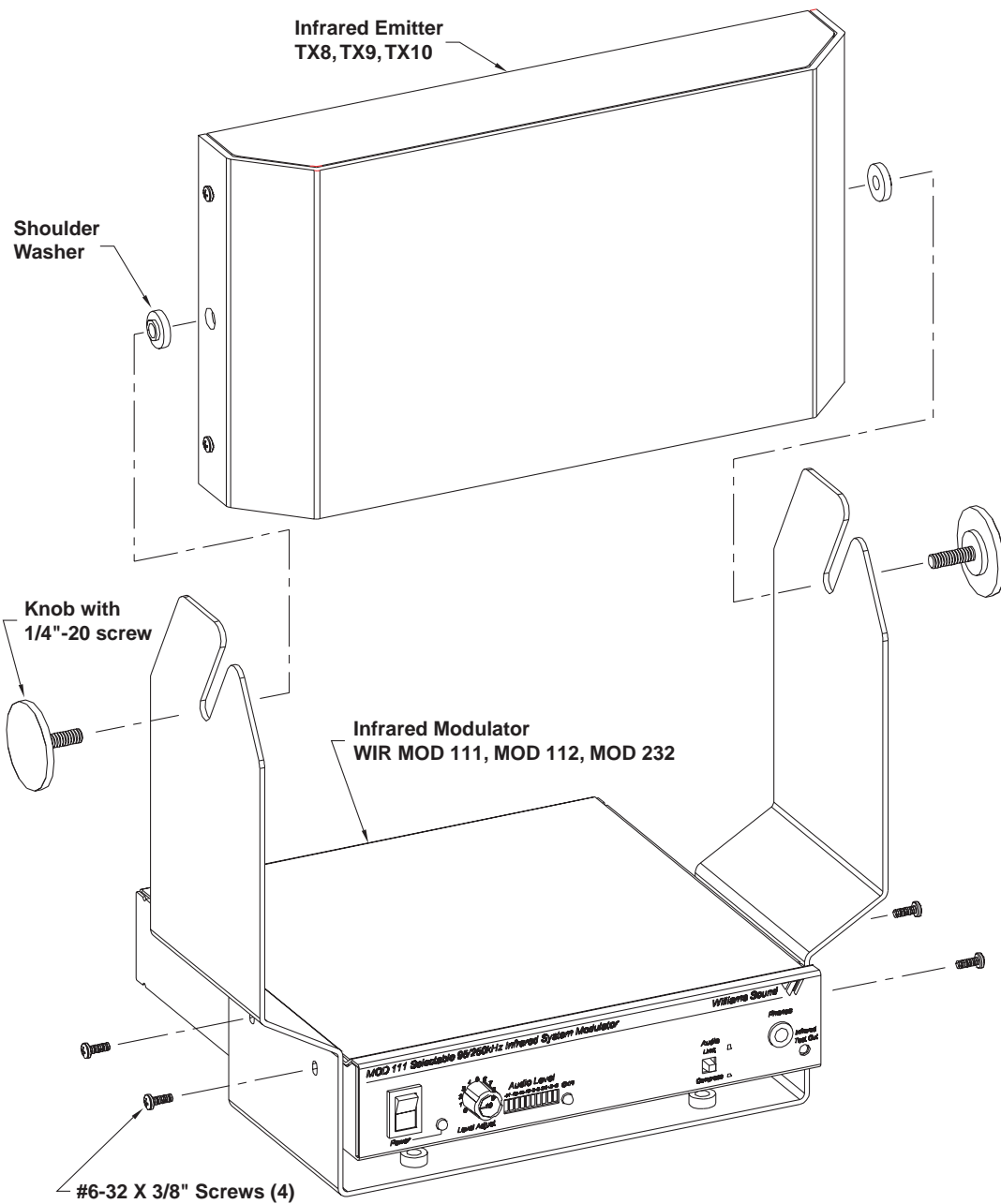


### Instructions for Use and Care

- 1.) First, insert the grommet screw through the hole in the bottom of the BKT 014 bracket as illustrated in Figure 19a above.
- 2.) Turn the butterfly screw clockwise (but do not tighten completely) so the grommet screw and BKT 014 bracket are held into place.
- 3.) Carefully insert the grommet screw (with the attached BKT 014 bracket) into the top of the tripod tube (STD 004) as illustrated in Figure 19a above. Be sure the BKT 014 bracket and the top of the tripod tube are aligned flush as illustrated in Figure 19b.
- 4.) Lastly, tighten the butterfly screw so the BKT 014 bracket and the top of the tripod tube are held firmly into place.
- 5.) The SS-6 is now assembled and ready for use.

SS-6 Infrared Stand Kit (cont.)

**Figure 20:** Installing the TX9 Emitter and MOD 232 Modulator on to the bracket

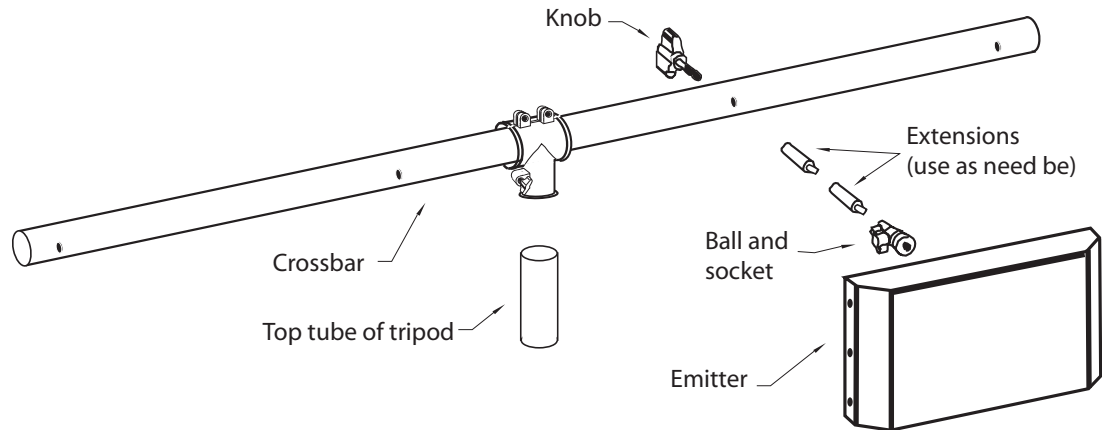


## MOUNTING MULTIPLE TX9 EMITTERS ON TO A TRIPOD

### SS-11 Infrared Stand Kit

The SS-11 Infrared Stand Kit can hold up to *four* TX9 Emitters at one time. The following diagram illustrates proper installation when using the SS-11 Infrared Stand Kit.

**Figure 21:** Mounting the TX9 to the tripod crossbar

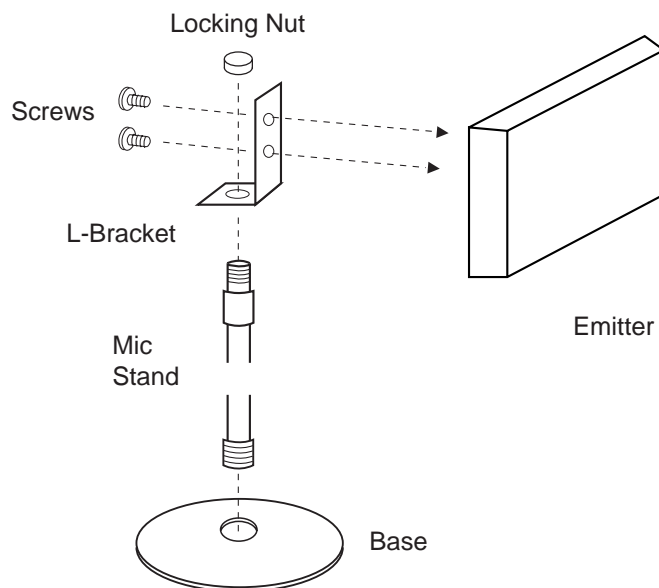


## MOUNTING A SINGLE TX9 ON TO A MIC STAND

### SS-10 Mic Stand Kit.

The following diagram illustrates proper installation when using the SS-10 Mic Stand Kit.

**Figure 22**



## TX9 WIRING AND CONNECTIONS

### FOR U.S. APPLICATIONS:

The TX9 Emitter is supplied with a low-voltage wall transformer power supply (TFP 010). Two-conductor 18 ga. zipcord is included with the emitter.

### FOR U.S. APPLICATIONS OUTSIDE THE U.S. REQUIRING 240 VAC MAINS SUPPLY:

Use the transformer power supply, model TFP 027.

Secondary Specifications: 24 VAC, 35 VA, 50/60 Hz.

TFP 027-01, Euro Mains Cord

TFP 027-02, UK Mains Cord



**WARNING: POWERLINE VOLTAGE MUST NOT FALL BELOW 94V,  
OR SYSTEM PERFORMANCE WILL BE GREATLY REDUCED!**

- Step 1: Determine the length of zip cord needed to reach from the transmitter to the AC wall outlet where the power supply will be plugged in. If zip cord length will exceed 200 feet (61 m), heavier gauge wire is required. Use the table below.  
**Make sure the power supply is not plugged into AC yet!**

<u>Cable Length Required</u>	<u>Minimum Wire Gauge</u>
0 – 10 feet (3 m)	22 gauge
0 – 75 feet (23 m)	20 gauge
0 – 200 feet (61 m)	18 gauge
0 – 500 feet (152 m)	16 gauge
0 – 1000 feet (305 m)	14 gauge

One end of the zipcord has a 3-pin Molex connector, the other end is bare. Cut the bare end of the zipcord to length. Separate the two conductor wires down the middle approximately 1 inch, then strip both of the resulting strands about 1/8 inch. For US installations, install the crimp-on spade terminals supplied. Connect these to the screw terminals on the Power Supply. Polarity is not important since AC power is being used.

- Step 2: Plug the 3-pin Molex connector into the TX9's Power In connector (see Figure 25, page 25).
- Step 3: **Plug the Power Supply in last.**  
The Power Indicator LED on the right side of the bottom panel (visible from directly underneath) glows when the TX9 is on.

Note: The TX9 transmits when a baseband signal is present, and will shut off immediately when no baseband signal is present. This auto shut-off feature preserves the life of the infrared LEDs and reduces power consumption.

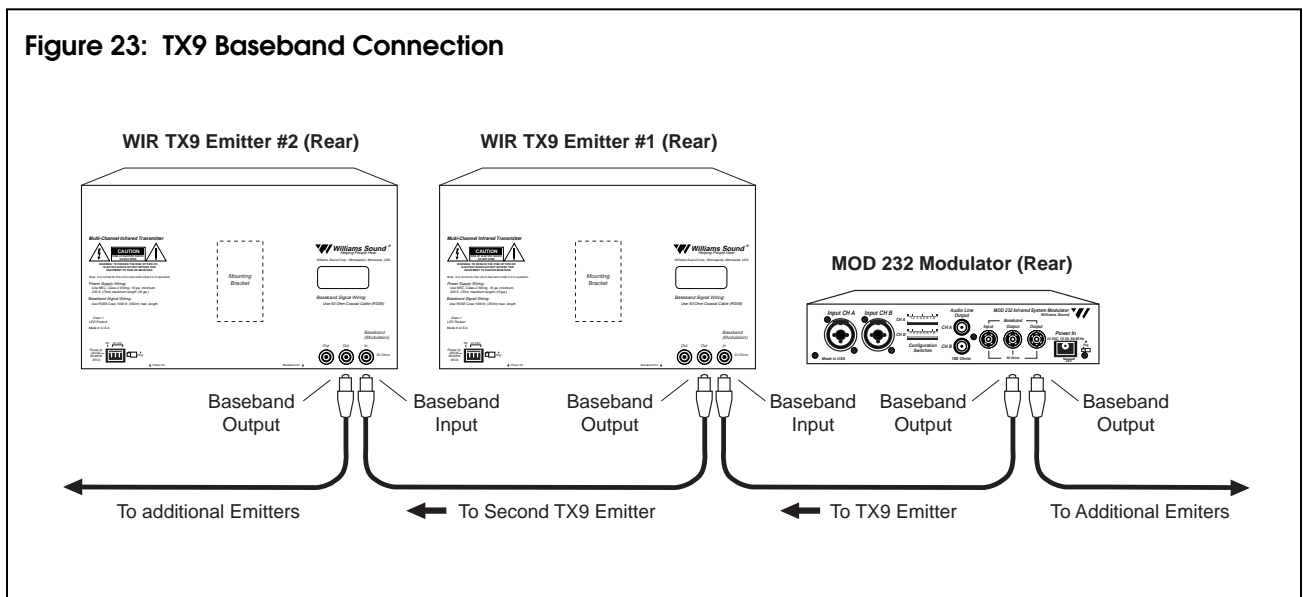
This system is designed for Class 2, low-voltage wiring. Always follow local electrical codes when doing low voltage wiring.

## BASEBAND CABLE CONNECTION

### If you are using ONE emitter:

- Step 1: Determine the length of RG-58 coaxial cable needed to reach from the emitter to the modulator unit. The modulator is usually located with the other sound equipment to simplify audio connections. 100 feet (30 m) of coaxial cable is included with each emitter. You will need to cut it to length. Additional RG-58 coax can be added. Make sure you leave some slack at each end.
- Step 2: Install BNC connectors on each end of the cable. (See page 24 for complete description)
- Step 3: Connect the Baseband cable to the Baseband Out jack on the MOD 232 Modulator and to the Baseband In jack on the TX9 Emitter.

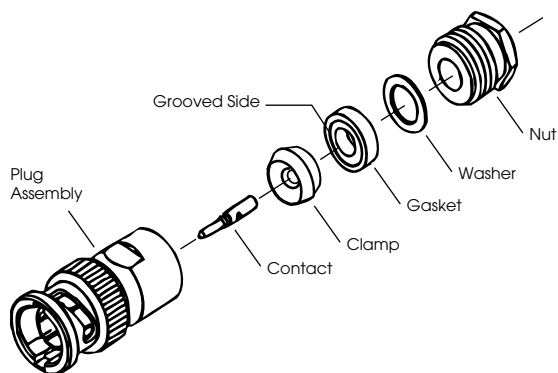
**Figure 23: TX9 Baseband Connection**



### If you are using MORE THAN ONE emitter:

- Step 1: Determine the length of coaxial cable needed to reach between the emitters. 100 feet (30 m) of coaxial cable is included with each emitter. You will need to cut it to length. Additional RG-58 coax can be added. Make sure you leave some slack at each end.
- Step 2: Install BNC connectors on each end of the cable (See page 24 for complete description)
- Step 3: Connect the baseband cable from the Baseband Out Jack on the first emitter in the chain (the one connected to the MOD 232 Modulator) to the Baseband In jack on the next TX9 Emitter in the chain. Use the cable clamps and screws provided to secure the cable. The coax can also be routed through conduit before attaching BNC connectors. You can chain as many emitters together as you need. **Remember that each emitter needs its own power supply and can not share a power supply with a modulator.**

**FIGURE 24A: BNC CONNECTOR ASSEMBLY**



#### ASSEMBLY PROCEDURE

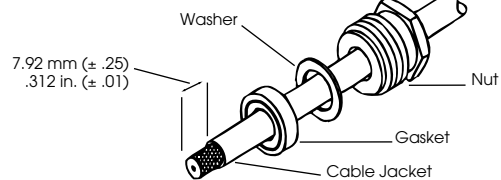
The BNC Connector consists of a plug assembly, a contact, a clamp, a gasket, a washer, and a nut.

1. Slide nut, washer and gasket over cable end; then strip outer cable jacket using the recommended strip-length dimension in fig. 24b.
2. Slide clamp over cable braid and position it against the cable jacket. After clamp is properly positioned, comb out the braid.
3. Fold cable braid over the clamp and trim it so that it is positioned against the clamp collar. See figures 24c and 24d.
4. Using the dimension in figure 24e, strip dielectric to expose the center conductor. If applicable, tin the center conductor.
5. Solder contact to the conductor (using standard soldering techniques), making sure contact is bottomed on cable dielectric. See figure 24f.

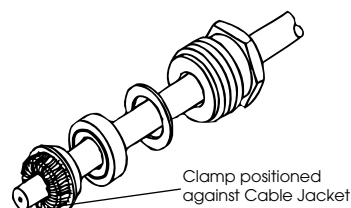
DO NOT allow a hot soldering iron to touch cable dielectric. Certain cable dielectric materials, such as polypropylene, will expand if they come in contact with a hot soldering iron.

6. Insert contact into plug assembly until contact snaps into place. See figure 24g.
7. Thread nut into plug assembly until it is secured. Recommended cable clamp tightening torque is 2.8–3.4 N•m [25-30 in.-lb.], using a 7/16" wrench. See figure 24h.

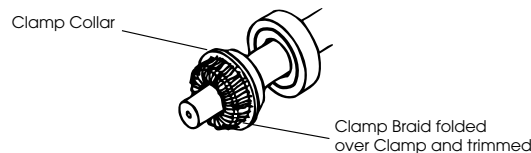
**24B**



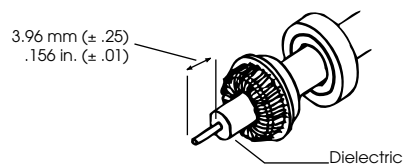
**24c**



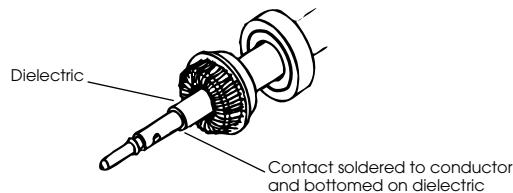
**24d**



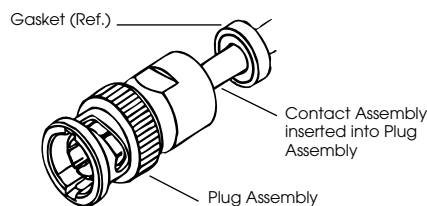
**24E**



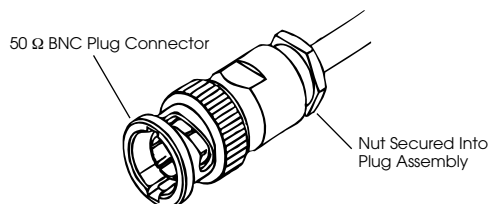
**24F**



**24G**



**24H**





## TX9 FEATURES AND CONTROLS

### POWER INPUT

Three-pin connector for TFP 010 (110 VAC) or TFP 027 (for 240 VAC installations) power supply.

### POWER INDICATOR LED

Visible through the bottom panel (Fig. 25). Green indicator light glows when power is on.

Note: The TX9 shuts off when no baseband signal is present.

### BASEBAND INDICATOR LED

Visible through the bottom panel (Fig. 25). Red indicator light glows when power is on.

### BASEBAND IN

Connects to the Baseband Out jack of the MOD 232 modulator or another TX9 emitter.

### BASEBAND OUT

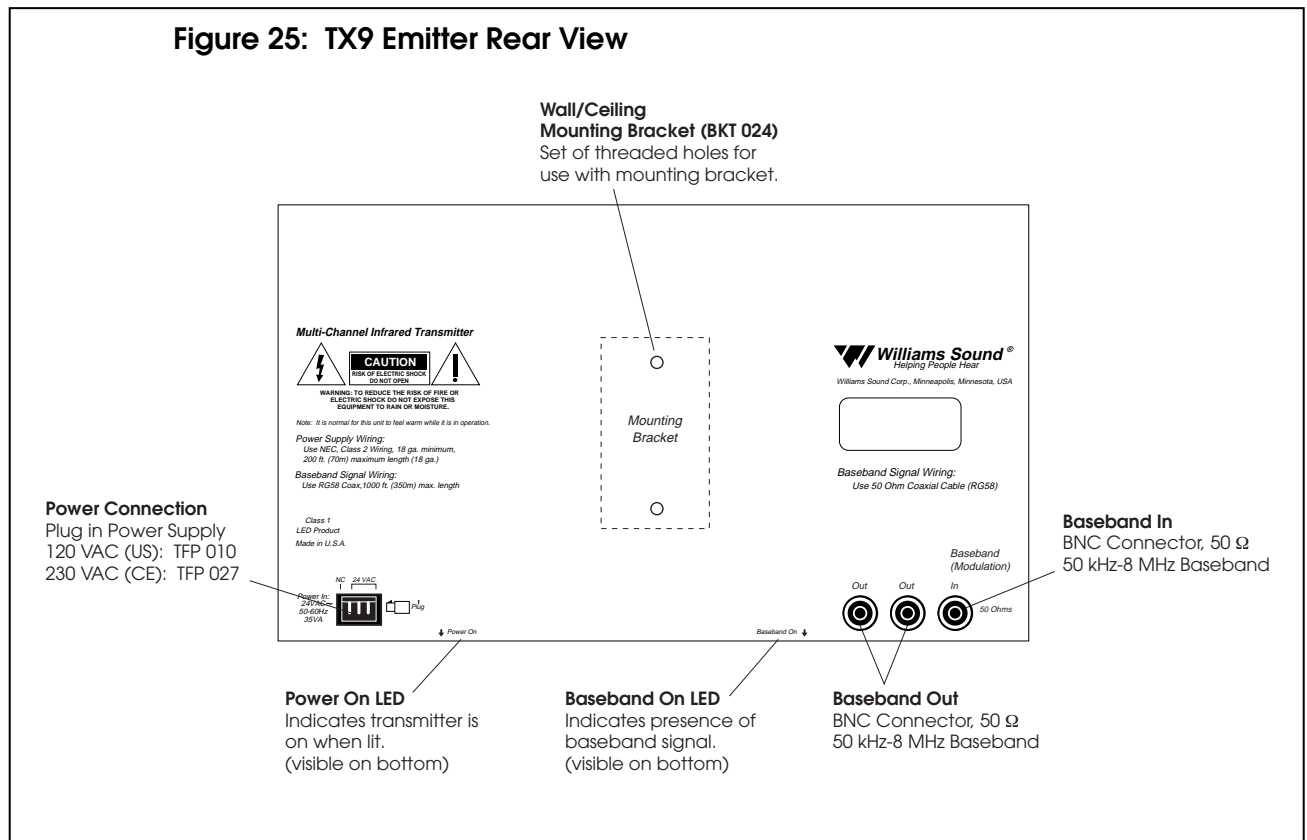
Connects to the Baseband In jack of the next TX9 emitter in the chain when multiple emitters are used. There are two Baseband Output jacks to allow additional emitters to be connected.

### WALL/CEILING MOUNTING BRACKET

An adjustable mounting bracket (BKT 024) is included with the emitter. An optional tripod stand kit is also available. See pages 17-19.

Note: The WIR TX9 Infrared Emitter is a Class 1 LED product.

Figure 25: TX9 Emitter Rear View



## RECEIVER SAFETY INFORMATION

### HEARING SAFETY



#### **CAUTION!**

This product is designed to amplify sounds to a high volume level which could potentially cause hearing damage if used improperly. **To protect your hearing and the hearing of others:**

1. Make sure the volume is turned down before putting on the earphone or headphone before adjusting the volume to a comfortable level.
2. Set the volume level at the minimum setting that you need to hear.
3. If you experience feedback (a squealing or howling sound), reduce the volume setting and move the microphone away from the earphone or headphone.
4. Do not allow children **or other unauthorized persons** to have access to this product.

### BATTERY SAFETY AND DISPOSAL



#### **CAUTION!**

This product is supplied with disposable Alkaline batteries. Do not attempt to recharge disposable batteries, which may explode, release dangerous chemicals, cause burns, or other serious harm to the user or product.

### PACEMAKER SAFETY:



#### **CAUTION!**

1. **Before** using this product with a pacemaker or other medical device, consult your physician or the manufacturer of your pacemaker or other medical device.
2. If you have a pacemaker or other medical device, make sure that you are using this product in accordance with safety guidelines established by your physician or the pacemaker manufacturer.

## RECYCLING INSTRUCTIONS

### BATTERY SAFETY AND DISPOSAL



Help Williams Sound protect the environment! Please take the time to dispose of your equipment properly.

#### **Product Recycling for Customers in the European Union:**

Please do NOT dispose of your Williams Sound equipment in the household trash. Please take the equipment to a electronics recycling center; OR return the product to the factory for proper disposal.



#### **Battery Recycling for Customers in the European Union:**

Please do NOT dispose of used batteries in the household trash. Please take the batteries to a retail or community collection point for recycling.

7/14/05

## OPTIONAL RECEIVER INSTRUCTIONS

### FOUR CHANNEL RECEIVER, MODEL WIR RX12-4

Make sure the two "eyes" located on the front label of the receiver (Figure 22a) are not covered up when in use. Do not place the receiver in a pocket or purse or it will not work properly. A variety of earphones, headphones, or a neckloop telecoil coupler can be used with the RX12-4 Receiver.

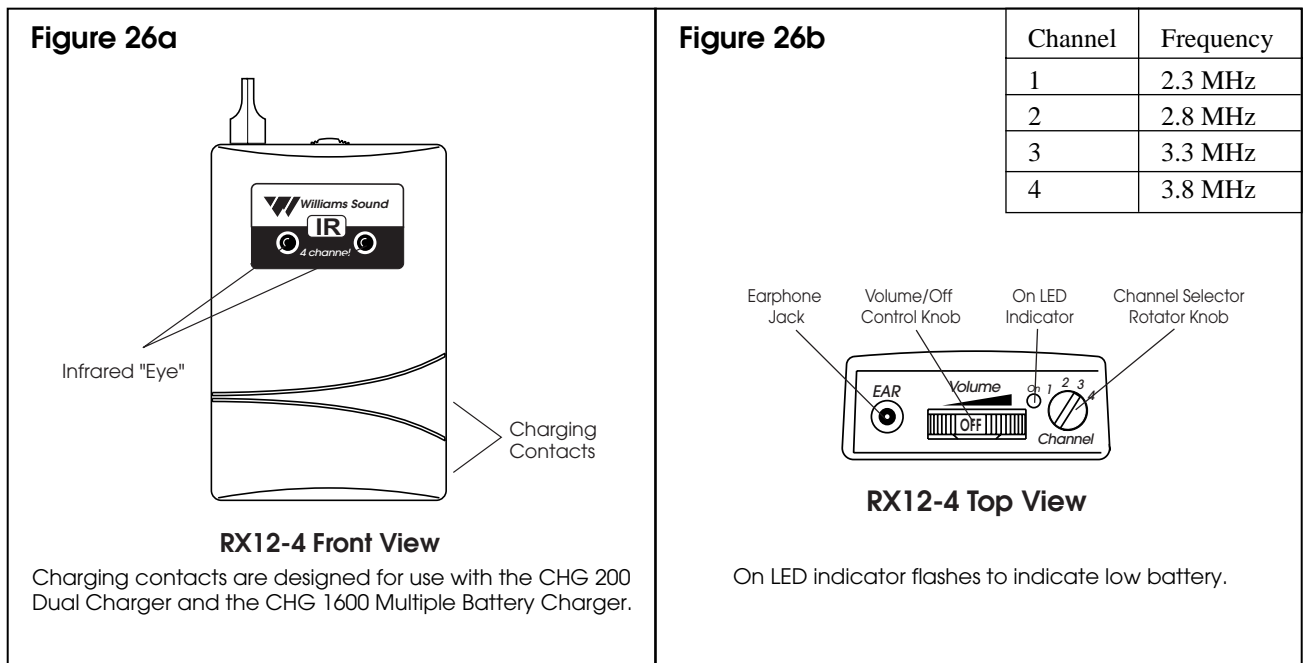
Step 1: To install the batteries, open the battery compartment using a coin in the slot in the bottom of the receiver. Press two AA batteries into place, observing proper battery polarity.

Step 2: Plug the earphone or headphone into the earphone jack.

Step 3: Turn the receiver on by rotating the volume control knob clockwise.

Step 4: Select a listening channel (1-4) by rotating the channel control knob.

*To avoid draining the battery, make sure the receiver is turned off when not in use. The "on" indicator LED will flash to indicate a low battery.*



<b>Expected Battery Life:</b>	AA Alkaline Batteries (BAT 001):	60 hours
	AA NiMH Rechargeable Batteries:	30 hours/charge



**WARNING:** Do not attempt to recharge zinc carbon ("heavy duty"), alkaline, or lithium batteries. These batteries may heat up and explode, causing possible injury and damage to the equipment.

- Avoid shorting the plus and minus battery terminals together with metal objects. Battery damage and burns can result!
- Use only Williams Sound supplied chargers and batteries.

## TWO CHANNEL RECEIVER, MODEL WIR RX14-2

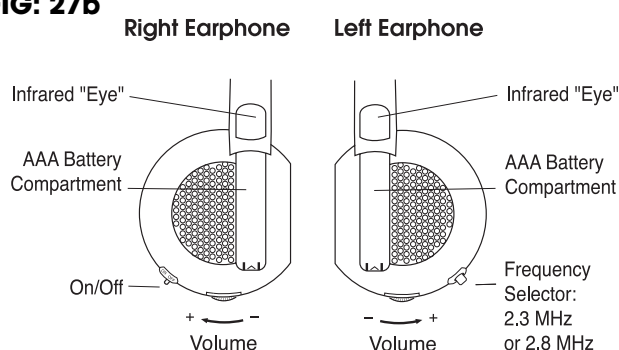
- Step 1: Turn the receiver's Power Switch to ON
- Step 2: Place the headset on your head and adjust the headband size by pulling or pushing on each earpiece.
- Step 3: Locate and adjust the individual volume controls for a comfortable listening level.
- Step 4: Choose between 2.3 MHz or 2.8 MHz operation by pressing the *frequency selector* button on the left earphone. NOTE: Be sure the infrared transmitter being used is transmitting on 2.3 MHz or 2.8 MHz!

**FIG: 27a**



**RX14 Headset Receiver  
FRONT VIEW**

**FIG: 27b**



## BATTERY INSTRUCTIONS

This receiver comes standard with disposable AAA Alkaline batteries (BAT 010). Rechargeable AAA NiMH batteries (BAT 022) may also be used (not included).

### EXPECTED BATTERY LIFE

BAT 010 AAA Alkaline batteries	50 hours
BAT 022 AAA NiMH batteries	8 hours per charge

*Batteries from other suppliers may provide different operating life.*

### INSTALLING AND REPLACING BATTERIES

- Step 1: The bottom of each battery compartment has a marked "arrow." Apply pressure to the arrow and pull the compartment open.
- Step 2: Remove depleted batteries.
- Step 3: To install new batteries, press them into place, *observing proper polarity (+/-)*.
- Step 4: Close the battery compartment by inserting the cover top first (tabbed), then snap the bottom into place.
- Step 5: When the sound becomes weak or distorted, replace or recharge batteries.
- Step 6: If using rechargeable batteries, charge batteries overnight prior to operating.

*Do not mix batteries and chargers from different suppliers.*

## TROUBLE SHOOTING

### **NEITHER TX9 INDICATOR LIGHT IS ON.**

- ▶ Make sure the transformer is plugged into the emitter and any remote power switch is on.
- ▶ Make sure the electrical outlet is on.
- ▶ Make sure the 24 VAC power supply is working.

### **ONLY TX9's POWER INDICATOR LED COMES ON.**

- ▶ Make sure the MOD 232 is on.
- ▶ Make sure the baseband cable is connected properly. See Figures 3 & 4.
- ▶ Check to see if the carrier light on the MOD 232 is on.
- ▶ Make sure an audio signal is being sent to the MOD 232.

### **NO SOUND THROUGH RECEIVERS.**

- ▶ If some of the receivers work but others don't, check for bad batteries or earphones on the receivers that aren't working.
- ▶ If none of the receivers work, check to see if the power and baseband cable are connected to the emitter and that the TX9 Power and Baseband Present Indicator lights are ON.
- ▶ Check to see if the modulator is connected properly to the sound system. The Frequency Indicator should be lit and there should be activity on the MOD 232 Level Indicators.
- ▶ Make sure the "eye" is not covered up on the receiver. There must be clear line of sight between the receiver eye and the emitter panel.

### **SOUND THROUGH THE RECEIVERS IS WEAK AND NOISY.**

- ▶ Make sure each channel is set to a different frequency on the MOD 232 modulator. Listen to the audio signal through the Phones jack of the MOD 232 modulator. You can also hold a receiver in front of the Infrared Test LED on the front of the MOD 232 modulator and listen to the audio signal. If the signal is weak and noisy here, check the Input Level switch and Input Level Control settings. Increase the input signal level from the sound system by turning up the mixer control. If the signal sounds okay, you may need to re-position the emitter panels or add additional panels.

*NOTE: Make sure the powerline voltage does not fall below 94V, or system performance will be greatly reduced!*

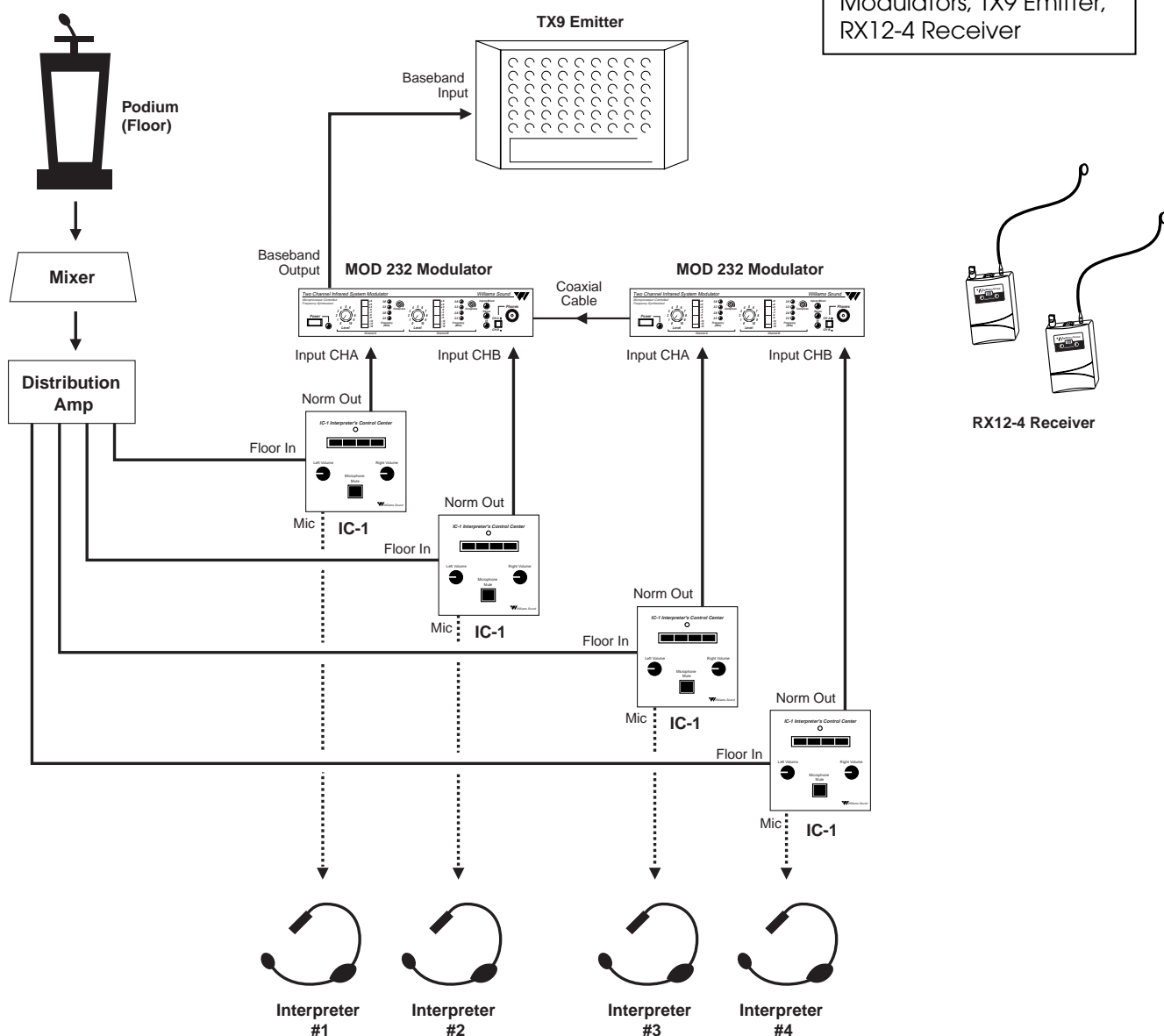
### **BUZZING OR HUMMING NOISE IN SOUND SYSTEM.**

- ▶ Check for ground loops or noise on the input signal. Call your Authorized Williams Sound dealer or representative.

## SIMULTANEOUS LANGUAGE INTERPRETATION: IC-1 INTERPRETER'S CONTROL CENTER

Figure 28 below illustrates a typical four-channel setup using the IC-1 Control Center. Each interpreter monitors the floor signal independently via the "Floor In" connection. To transmit the interpreted message to the listener, the interpreter selects the "Norm" push button on the IC-1 to send their mic signal to the MOD 232 Modulator. To transmit the floor signal directly to the listener, the interpreter selects the "Off" push button on the IC-1. Listeners use four-channel wireless IR receivers (RX12-4) to select the language they understand. Additional instructions are included with the IC-1.

**Figure 28: IC-1 Four-Channel Configuration**





## Limited Warranty

Williams Sound products are engineered, designed, and manufactured under carefully controlled conditions to provide you with many years of reliable service. Williams Sound warrants the Sound Plus™ Infrared Listening System against defects in materials and workmanship for FIVE (5) years. During the first five years from the purchase date, we will promptly repair or replace the Sound Plus™ Infrared Listening System.

*Microphones, earphones, headphones, batteries, chargers, cables, carry cases, and all other accessory products carry a 90-day warranty.*

WILLIAMS SOUND HAS NO CONTROL OVER THE CONDITIONS UNDER WHICH THIS PRODUCT IS USED. WILLIAMS SOUND, THEREFORE, DISCLAIMS ALL WARRANTIES NOT SET FORTH ABOVE, BOTH EXPRESS AND IMPLIED, WITH RESPECT TO THE SOUND PLUS™ INFRARED LISTENING SYSTEM, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. WILLIAMS SOUND SHALL NOT BE LIABLE TO ANY PERSON OR ENTITY FOR ANY MEDICAL EXPENSES OR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY ANY USE, DEFECT, FAILURE OR MALFUNCTIONING OF THE PRODUCT, WHETHER A CLAIM FOR SUCH DAMAGES IS BASED UPON WARRANTY, CONTRACT, TORT OR OTHERWISE, THE SOLE REMEDY FOR ANY DEFECT, FAILURE OR MALFUNCTION OF THE PRODUCTS REPLACEMENT OF THE PRODUCT. NO PERSON HAS ANY AUTHORITY TO BIND WILLIAMS SOUND TO ANY REPRESENTATION OR WARRANTY WITH RESPECT TO THE SOUND PLUS™ INFRARED LISTENING SYSTEM. UNAUTHORIZED REPAIRS OR MODIFICATIONS WILL VOID THE WARRANTY.

The exclusions and limitations set out above are not intended to, and should not be construed so as to contravene mandatory provisions of applicable law. If any part or term of this Disclaimer of Warranty is held to be illegal, unenforceable, or in conflict with applicable law by a court of competent jurisdiction, the validity of the remaining portions of this Disclaimer of Warranty shall not be affected, and all rights and obligations shall be construed and enforced as if this Limited Warranty did not contain the particular part or term held to be invalid.

If you experience difficulty with your system, call Toll-Free for customer Assistance:

**1-800-843-3544**

If it is necessary to return the system for service, your Customer Service Representative will give you a Return Authorization Number (RA) and shipping instruction.

Pack the system carefully and send it to:

Williams Sound Corp.  
Attn: Repair Dept.  
10321 West 70th Street  
Eden Prairie, MN 55344 USA

Your warranty becomes effective the date you purchase your system. Your returned warranty card is our way of knowing when your warranty begins. It also gives us important information about your system including the serial number. This information will help us serve you better in the future. Please take a moment to complete and mail the attached card. Thank you.

# SOUNDPLUS™ INFRARED LISTENING SYSTEM SPECIFICATIONS

## Models WIR TX900, WIR TX925, WIR SYS 1, WIR SYS 2, WIR SYS 2P, WIR SYS 4

### Two-Channel Modulator, Model MOD 232

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Size, Weight:	8.5" W x 8.2" D x 1.7" H (21.5 cm x 20.8 cm x 4.4 cm), 3.1lbs. (1.5 kg)
Color:	Black epoxy paint with white legends
Rack Mount:	1/2 rack space wide, 1 rack space high, one or two modulators may be mounted in a single IEC rack space with RPK 005 (single) or RPK 006 (double) Rack Mount Kits
Power Supply:	Wall Transformer, 24VAC, 50-60 Hz, 15VA North America: TFP 016, UL/CSA Europe: TFP 027-01, 2-pin Schuko plug, CE UK: TFP 027-02, 3-pin UK plug, CE
Modulation:	FM Wideband, $\pm 50$ kHz deviation, 50uS pre-emphasis
Carrier Frequency:	Channel A: Selectable, 2.3/2.8/3.3/3.8MHz Channel B: Selectable, 2.3/2.8/3.3/3.8MHz
Signal to Noise Ratio:	More than 60dB
Frequency Response:	30 to 16,000Hz, +1 dB, -3dB, electrical response
Total Harmonic Distortion:	Less than 2%, electrical response
Audio Processing:	Compression (slope) adjustable from 1:1 to 4:1 Switchable compression gain: Moderate: 16dB. Max: 33dB
Auto Carrier Shut-Off:	30 minute timer shuts off carrier when no audio is present (can be disabled)
Power Switch:	Two-position push button, ON/OFF
Power Indicator:	Green LED
Audio Level Controls:	CHA and CHB Input Level, rotary knobs
Audio Indicators:	CHA and CHB Audio Level, 10-segment LED's
Carrier LEDs:	4 green LED carrier "on" indicators per channel (indicates frequency, malfunctions)
Compress Control:	1:1 to 4:1
Input Mix LED:	Indicates inputs A and B audio are mixed and transmitted by CHA. CHB off
Stereo LED:	Indicates stereo mode
Phones Switch:	Selects CH1 or CH2 for phones when not in stereo mode
Phones Output:	1/4" TRS headphone jack. Accepts stereo, mono, and any impedance phones.
Infrared Test LED:	IR LED for receiver testing, monitoring, and audio signal testing.
Power Input:	3-Pin Molex, 24VAC, 50-60Hz, 15 VA
Audio Input Jack:	CHA and CHB combination XLR/TRS jack
Mic Level:	Balanced, Lo-Z, 100 $\mu$ V min. to 90 mV max., 1mV nominal, 3k $\Omega$ input impedance, supplies switchable simplex power per DIN 45596 for condenser mics
Line Level:	Balanced or unbalanced, 21mV min. to 10V max., 212mV nominal, 100k $\Omega$
Audio Line Output Jacks:	RCA Jack, CHA and CHB, 500mV, unbalanced, 100 $\Omega$ source impedance, load impedance must be greater than 1k $\Omega$
Configuration Switches:	CHA and CHB 8-position DIP switch, selects Mic/Line input, compressor gain, simplex power, discrete or mixed inputs, carrier frequency, channel disable, auto shut-off timer.
Baseband Input Jack:	BNC, allows mixing with additional MOD 232 Modulator (4CH operation), 100mV, 50 $\Omega$ input impedance, use with MOD 232 or MOD 112 (111), BNC, RG-58 Cable
Baseband Output Jack:	Two BNC jacks carry baseband signal, 100mV/channel, 50 $\Omega$ source impedance, for use with WIR TX9 or MOD 232 only
Approvals:	CE, FCC Part 15, Industry Canada, AS
Operating requirements:	0-50° C ambient temperature, non-condensing, non-corrosive atmosphere
Warranty:	5 years on Modulator, 90 days on accessories

**NOTE: SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.**



## Multi-Channel Infrared Emitter, Model TX9

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Dimensions, Weight:	11.25" W x 6.25" H x 2.125" D (28.6 cm x 15.9 cm x 5.4 cm), 1.9lbs (0.9 kg)
Color:	Black with white legends, red acrylic lens
Power Supply:	Wall Transformer, 24VAC, 50-60Hz, 35VA, 3-pin MOLEX Connector North America: TFP 010, UL/CSA Europe: TFP 027-01, 2-pin Schuko plug, CE UK: TFP 027-02, 3-pin UK plug, CE <i>Note: Each WIR TX9 requires its own power supply</i>
Power Cable:	NEC Class 2 wiring, two-conductor, 18 ga., 200' (61m) max. length
Indicators:	Green LED power indicator, red LED baseband indicator
Carrier Frequency:	50 kHz to 8 MHz
Emitter IR Power:	3.5 watts
Coverage Area:	28,000 ft <sup>2</sup> (2,600 m <sup>2</sup> ) in single-channel mode when using the RX12-4 Receiver 11,000 ft <sup>2</sup> (1,000 m <sup>2</sup> ) in four-channel mode when using the RX12-4 Receiver 3,500 ft <sup>2</sup> (325 m <sup>2</sup> ) in single channel mode when using the RX14-2 Receiver 3,063 ft <sup>2</sup> (285 m <sup>2</sup> ) in single channel mode when using the RX16 Receiver <b>(See coverage area diagrams)</b>
Baseband Input:	BNC, 100mV per carrier, 50Ω, for use with WIR TX9 or MOD 232 only
Baseband Output:	BNC, 50Ω, for use with TX9 only
Baseband Cable:	RG 58 Coax, BNC connectors, maximum 1000' (300m) length
Operating Requirements:	0-50° C ambient temperature, non-condensing, non-corrosive atmosphere
Mounting Kits:	Wall or Ceiling Mount: BKT 024 Omnidirectional mount, Mic Stand Kit: SS-11 or SS-6
Warranty:	5 years on Emitter, 90 days on accessories
Approvals:	CE, FCC Part 15, Industry Canada, AS
Compatible Receivers:	WIR RX12-4 Four Channel Receiver, WIR RX14 Two Channel Receiver, RX16 Two-Channel Receiver

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## Four-Channel Infrared Receiver, Model RX12-4

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Receiver Style:	Body-Pack, dual-lens detector, lanyard
Size:	3-5/8" L x 2-3/8" W x 7/8" H (9.2 cm x 6 cm x 2.2 cm)
Weight:	4.5oz. (127 g) with batteries
Color and Material:	Gray, shatter-proof polyallomer
Lanyard:	3 ft. (.91 m), allows receiver to be worn around the neck
Operating Temperature:	-10°C to +50°C
Battery Type:	2 x AA, alkaline (BAT 001) or NiMH (BAT 026)
Battery Life:	Alkaline: 60 hours, NiMH: 30 hours/charge
Battery Drain:	25mA, nominal
Charging Contacts:	For use only with CHG 200 and CHG 1600 Chargers
Carrier Frequency:	Channel 1: 2.3MHz, Channel 2: 2.8MHz Channel 3: 3.3MHz, Channel 4: 3.8MHz
Operating Range:	Up to 28,000 ft <sup>2</sup> (2,600 m <sup>2</sup> ) when using a single TX9 Emitter in single channel mode. (See coverage drawing).
De-Emphasis:	50uS
FM Deviation:	±50 kHz
Signal to Noise Ratio:	60dB min.
Squelch:	Receiver squelches (mutes) at 40dB S/N ratio
Frequency Response:	25 Hz to 16 KHz, +1 dB, -3 dB, electrical response
Total Harmonic Distortion:	Less than 1%, electrical response
Controls:	ON/OFF/VOLUME: combination thumbwheel knob Channel Selector: Four position rotary switch
Indicators:	Red LED "ON" indicator, flashes to indicate Lo battery
Audio Output Jacks:	3.5mm stereo mini phone jack. Accepts 3.5mm mono or stereo phone plug
Audio Output Power:	15mW max at 32Ω
Acoustic Output:	110 dB SSPL90 w/ EAR 013
Sensitivity:	Better than 1 nW/cm <sup>2</sup> for 40 dB signal to noise ratio
Approvals:	CE, FCC, Industry Canada, AS
Warranty:	5 years on Receiver, 90 days on accessories
Compatible Headphones/Earphones:	Mono or stereo, 8-32 ohms, 3.5 mm mini phone plug, HED 021, HED 026, EAR 013, EAR 014, EAR 022

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## Two-Channel Infrared Receiver, Model WIR RX14-2

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Receiver Style:	Headset
Earpad Size:	2.5" (6.5 cm) diameter, adjustable headband
Weight:	6.7 oz (191g) without batteries
Color and Material:	Black, plastic
Operating Range:	Up to 3,500 ft <sup>2</sup> (325 m <sup>2</sup> ) when using a single WIR TX9 Emitter. See coverage drawing.
Battery Type:	AAA Alkaline batteries (BAT 010). AAA NiMH (BAT 022) optional
Battery Life:	Alkaline: 50 hours, NiMH: 8 hours/charge
Battery Drain:	25mA, nominal
Controls:	ON/OFF switch (2) Thumbwheel volume control knob, left and right (1) Frequency push-button selector, 2.3 MHz or 2.8 MHz
Acoustic Output:	118 dB MAX SSPL90, +/- dB with 6 cc coupler
Warranty:	1-year warranty (excludes physical damage)
Approvals:	CE

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